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# PHASE II BASELINE AND PHASE I MIDLINE REPORT

## IMPACT EVALUATION OF THE FEED THE FUTURE TANZANIA LAND TENURE ASSISTANCE ACTIVITY

MARCH 2018

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### **DISCLAIMER**

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

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## ACRONYMS

CCRO	Certificate of Customary Right of Occupancy
CI	Confidence Interval
DAI	Development Alternatives, Inc.
DDL	Development Data Library (USAID)
DLO	District Land Office
E3	Bureau for Economic Growth, Education, and Environment (USAID)
FTF	Feed the Future
GOT	Government of Tanzania
GSES	Generalized Self-Efficacy Scale
HH	Household
ICC	Intra-Cluster Correlation
IE	Impact Evaluation
KII	Key Informant Interview
LTA	Land Tenure Assistance
LU	Office of Land and Urban (USAID/E3)
MAST	Mobile Application to Secure Tenure
MDES	Minimum Detectable Effect Size
MSI	Management Systems International
NGO	Non-Governmental Organization
PLC	Office of Planning, Learning, and Coordination (USAID/E3)
RCT	Randomized Controlled Trial
RSA	Research Solutions Africa
SAGCOT	Southern Agricultural Growth Corridor of Tanzania
SOW	Statement of Work
VLUP	Village Land Use Plan
USAID	United States Agency for International Development

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## EXECUTIVE SUMMARY

This report corresponds to the impact evaluation (IE) of the Feed the Future Tanzania Land Tenure Assistance (LTA) activity commissioned by the Office of Land and Urban in the United States Agency for International Development's Bureau for Economic Growth, Education, and Environment (USAID/E3). The evaluation uses a two-phase randomized controlled trial design to rigorously test how mobile mapping and facilitation of land tenure certification affect income, women's empowerment, dispute prevalence, and other factors related to land use and tenure security in Iringa District, Tanzania. This document provides findings from the Phase II baseline for the IE, which includes a snapshot of key demographics, household characteristics, and outcome variables. The report also covers the Phase I midline and provides comparisons between the Phase I midline and baseline data. The document further provides a robust overview of key metrics for households in rural Iringa, and investigates whether changes have occurred between the two Phase I data collection rounds.

### LTA ACTIVITY DESCRIPTION

Tanzania presents a dynamic land tenure context. All land in Tanzania is owned by the state and held in trust by the president, but individuals residing on or using designated "Village Land" have the right to obtain formal documentation of their use rights in the form of a Certificate of Customary Right of Occupancy (CCRO).<sup>1</sup> However, insufficient capacity of district land offices (DLOs) that issue CCROs, a lack of funds to pay CCRO fees, unfamiliarity with formal land laws, and other factors have resulted in few villagers obtaining formal documentation for their plots. Increasingly, the Government of Tanzania (GOT) and the donor community recognize that improving the security of land rights is essential to protecting the rights of smallholders, reducing disputes and tensions, and maximizing the economic potential of the region.

USAID/Tanzania awarded the four-year, \$6 million LTA activity to DAI in December 2015. The activity seeks to clarify and document land ownership, support local land use planning efforts, and increase local understanding of land use and land rights in Tanzania. The LTA activity assists villages and the local DLO in Iringa and Mbeya districts in completing the land use planning process and delivering CCROs in select villages. It also provides education on land laws, CCROs, and land management. The LTA activity is using the Mobile Application to Secure Tenure (MAST), an app that facilitates the mapping and CCRO process. The LTA activity is being implemented in 36 villages: six that were chosen for initial implementation, and an additional 30 in Iringa District, Tanzania as part of the IE.

### EVALUATION QUESTIONS

Table I shows five questions addressed by the LTA IE that the evaluation team developed and finalized in collaboration with USAID. They are derived from the LTA's theory of change.

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<sup>1</sup> For more on Tanzania's land ownership system, see the USAID Country Profile, "Land Tenure and Property Rights: Tanzania," at [https://www.land-links.org/wp-content/uploads/2016/09/USAID\\_Land\\_Tenure\\_Tanzania\\_Country\\_Profile.pdf](https://www.land-links.org/wp-content/uploads/2016/09/USAID_Land_Tenure_Tanzania_Country_Profile.pdf).

**TABLE 1: THEMATIC AREAS OF INVESTIGATION AND EVALUATION QUESTIONS**

Thematic Area	Evaluation Questions
1. <b>Tenure security and land management</b>	1. In what ways and to what extent do landholders who have received formal land documentation through the assistance of LTA perceive their land rights to be more secure?
2. <b>Land disputes</b>	2. To what extent are landholders who have received formal land documentation through the assistance of LTA less likely to experience land disputes? 2.1 What kinds of disputes (if any) are affected and what are the mechanisms by which LTA affects them?
3. <b>Investment and land use</b>	3. To what extent do landholders who have received formal land documentation through the assistance of LTA change their investment and land use decisions in a manner that reflects strengthened incentives resulting from increased tenure security? 3.1 What (if any) are the specific decisions that are affected and how does LTA influence them?
4. <b>Empowerment</b>	4. To what extent do the LTA outreach and communication activities, as well as mapping, verification, and the formal registration of land, lead to a greater sense of empowerment on the part of women, youth, and pastoralists? 4.1 What (if any) are the specific aspects of empowerment that are affected and how does LTA influence them?
5. <b>Economic and environmental outcomes</b>	5. To what extent do the LTA interventions to strengthen land tenure lead to increased agricultural productivity, household income, and wealth, as well as more environmentally sustainable land-use practices and associated environmental benefits? 5.1 Which (if any) of these outcomes are affected and how does LTA influence them?

**EVALUATION DESIGN**

The LTA IE uses a cluster randomized design whereby villages are randomly assigned to receive the LTA activity or serve as control villages. The IE will measure LTA's impacts on activity beneficiaries in 30 randomly selected villages in Iringa District. Project implementation in the 30 villages is planned to take place in two phases: beginning in 2017 in an initial set of 15 randomly selected villages, followed by a second set of 15 randomly chosen villages beginning in mid-2018. Ideally, all 30 villages will be selected at the outset, with a single baseline collected prior to implementation. However, in response to concerns raised by DAI, village selection was designed to take place in two stages at the start of each implementation phase. DAI's concerns stemmed from potential shifts in village administrative and geographic boundaries during the implementation period, a common occurrence in Tanzania as village populations grow. In August 2017, due to concerns about achieving activity goals, the second phase of implementation was brought forward by approximately six months, as shown in Table 2. This has implications for midline data collection and findings, since behavior changes and other outcomes of interest are less likely to occur at scale over the revised six-month timeframe between survey rounds.

**TABLE 2: PROPOSED AND REVISED LTA ACTIVITY IE PHASES**

Proposed Implementation Start	Revised Implementation Start	Control	Treatment
April 2017	April 2017	15 randomly selected villages do not receive LTA	15 randomly selected villages receive LTA
April 2018	October 2017	15 randomly selected villages do not receive LTA	15 randomly selected villages receive LTA

The evaluation conducted a household panel survey of a random sample of respondents in each village prior to each implementation phase. An initial survey round in March-April 2017 served as the Phase I baseline, and a second survey round in September-Oct 2017 served as the midterm data collection for Phase I villages and the baseline for Phase II villages.

Phase II baseline data collection consisted of two household surveys administered to 1,320 respondents across 807 households in 32 villages<sup>2</sup> in Iringa District:

- The **“Head of Household Survey”** was administered to the identified head of household.
- The **“Wives’ Survey”** was administered to the primary spouse/partner of the head of household.

In addition to reporting on Phase II baseline data, this report also includes analysis of the Phase I midline. The midline survey redeployed an amended version of the Phase I/Phase II baseline survey and targeted respondents from the Phase I baseline. Of the original 1,179 respondents across 755 households in the Phase I baseline, the midline survey re-interviewed 907 respondents across 610 households, or around 81 percent of the original sample.

## PHASE II BASELINE KEY FINDINGS

### TENURE SECURITY AND LAND DISPUTES

- Phase II baseline results indicate low familiarity with land laws, as only nine percent of the treatment group and seven percent of the comparison group reported some level of knowledge.
- Almost half the treatment group household head sample (n = 182) reported an expectation that the incidence of disputes will improve over the next 12 months; the comparison group reported similar findings (n = 215).
- Overall, disputes were generally reported as inconsequential, but for those who did report dispute concerns, grazing disputes were perceived to be most problematic across both assignment groups.
- There is a slight clustering of disputes within villages that reported more than one dispute. In most cases, this clustering can be found where two respondents each reported one dispute within close proximity (i.e., the dispute is with a nearby neighbor).
- For the Phase II baseline, 11 percent of treatment group respondents and 14 percent of comparison group respondents possessed land-related documentation at baseline.

### LANDHOLDINGS, USE, AND INVESTMENT

- Households in both the treatment and comparison groups reported owning or renting about the same number of parcels, with a median of two parcels for both assignment groups. Only 59 (4.92 percent) and 49 (4.75 percent) respondents in the treatment and comparison groups, respectively, reported more than three parcels.
- Few respondents in the treatment group reported making any investments in their land. Low levels of building, soil conservation, and terracing are expected, given the capital-intensive nature of these activities. Less than 20 percent of respondents in both assignment groups reported tree-planting activity.

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<sup>2</sup> Two buffer villages were randomly assigned to treatment and control as part of Phase I and Phase II data collection.

## SOCIAL AND EMPOWERMENT OUTCOMES

The evaluation team examined food security, self-efficacy, and decision making as part of the social and empowerment outcomes for this evaluation. Key findings from baseline data collection included:

- Within the treatment group, 39 percent of female headed households (n = 35) and 23 percent of male headed households (n = 64) reported facing food insecurity over the previous 12 months. For the same period in the comparison group, 33 percent of female headed households (n = 35) and 17 percent (n = 54) of male headed households reported food insecurity in the previous year.
- When asked whether any household members went to sleep hungry, almost 11 percent of treatment respondents and only five percent (n = 21) of comparison households said this happened sometimes or often (n = 40).
- Household heads in the sample reported making a majority of the decisions on parcel use. In contrast, primary female spouses reported joint decision making most frequently on parcel use decisions.

## PHASE II BASELINE CONCLUSIONS

- **Household characteristics:** The baseline dataset includes 615 LTA beneficiary respondents, of whom 244 are primary female spouses. Around 40 percent of both of the assignment group samples is comprised of primary spouses.
- **Tenure security and land disputes:** The data show substantial perceived tenure insecurity around following, but low dispute incidence and little familiarity with land laws.
- **Landholdings, use, and investment:** Most households use multiple land parcels, with a wide variety in the size of the landholding. There was very little investment reported in either assignment group, but almost 20 percent of respondents in the treatment group reported planting non-fruit trees in the previous 12 months.
- **Social and empowerment outcomes:** About 27 percent of the treatment group and 21 percent of the comparison group reported facing food insecurity. Household heads generally reported that they were responsible for most parcel use decisions, while primary spouses reported that parcel use decisions were jointly made, on average. This is perhaps due to various cognitive or social-emotional biases and will need to be examined more thoroughly at endline and through qualitative work.
- As expected, given the randomized design, no major differences were observed between the treatment and control groups that would raise concerns for the IE.
- The IE is expected to have sufficient statistical power to accurately measure the impacts of LTA on a broad range of outcomes. However, the fact that implementation is limited to 30 villages may mean that the IE is not able to reliably detect impacts for a limited number of the anticipated outcomes, such as the environmental outcomes.

## PHASE I MIDLINE

The Phase I midline data included 610 households and 907 respondents. This sample includes about 81 percent of the Phase I baseline sample (n = 755 households and 1,179 respondents).

## CHANGES BETWEEN PHASE I BASELINE AND MIDLINE

The overall sample for the two Phase I survey rounds shows some changes to sample means over time, in the following key areas:

## LAND RIGHTS AND TENURE SECURITY

- While 16 percent (n = 60) of treatment group households surveyed at baseline said they possessed land-related documentation, at midline this had risen to 43 percent (n=125), a statistically significant change (p<0.01).
- Willingness to pay for CCROs fell in both the treatment and comparison groups between survey rounds by 18,881 shillings and 5,187 shillings, respectively. This difference was statistically significant for the treatment group (p<0.01).
- When asked about land disputes in the coming year, there was an 11 percent increase in treatment group respondents who expected that problems with land disputes will improve (151 to 168) (p<0.01). The comparison group saw the opposite between survey rounds: a nine percent decrease in respondents who expected that land disputes will improve in the next 12 months (149 to 135) (p<0.10).

## LAND DISPUTES

- The incidence of land disputes did not change for the treatment group between survey rounds; however, the percentage of the comparison sample who reported experiencing a dispute over the same period fell from 10 percent (n = 38) to around six percent (n=17) (p<0.10).

## LANDHOLDINGS, INVESTMENT, AND ENVIRONMENT

- Given the short period between baseline and midline, the evaluation team does not expect major changes in landholdings and investment behavior beyond what may be seasonally driven.
- The treatment group reported an increase in building construction investments from around 21 percent (n= 81) of the treatment sample to 47 percent of the sample (n=224); this likely reflects seasonal variation between survey rounds. The comparison group reported similar increases in building activity.

## HOUSEHOLD INVESTMENT AND WIVES' SURVEY

- The average number of treatment group respondents reporting that they would be able to obtain a loan if needed increased from 51 to 61 percent (p<0.01). There was no statistically significant change in this indicator for the comparison group over the same period.
- The percentage of respondents in the treatment sample who were aware of women's groups grew from 57 percent (n = 111) to 73 percent (n = 104) (p<0.01). There was also an increase in this measure, from 53 percent (n = 107) to 69 percent (n = 111) (p<0.01), in the comparison group.

## INFERENCE ANALYSIS FOR PHASE I MIDLINE

The evaluation team conducted preliminary inferential analysis to assess the causal impact of the LTA activity on select outcomes of interest. Anticipated changes to outcomes at the Phase I midline are likely to be smaller than expected at the time of the evaluation design, given the change in the implementation timeline and earlier collection of the midline data for Phase I. The inferential analysis can account for confounding factors that may drive part of the change in means between survey rounds. The evaluation team used a fixed effects difference-in-difference (DID) panel regression specification to test for the impact of the LTA activity on outcomes under each of the thematic outcome categories (tenure security and land management; land disputes; investment and land use; and empowerment). There were three main findings from this analysis:

- **Household possession of land-related documentation:** Controlling for household head gender, age, education level, and distance to Iringa, there is, on average, a 29.8 percent increase in the likelihood of a household having land document at midline, for households in the treatment group relative to those in the comparison group. The magnitude of impact is relatively large, and the statistical significance is robust to alternative model specifications.
- **Total household landholdings:** Results suggest that, on average at midline, total landholdings by treatment group households has increased by 0.67 ha relative to comparison group households. However, the magnitude of impact is small, the results are only marginally significant ( $p < .10$ ), and they are not robust to alternative model specifications.
- **Land related decision-making power exclusively by the male household head:** For treatment group households, and controlling for household and village factors, results suggest that there has been an 11.4 percent decrease in the likelihood of a land-related decision solely by the male household head ( $p < 0.05$ ).

## PHASE II BASELINE CONCLUSIONS

At this early midline stage, evidence suggests that LTA implementation may be leading to positive impacts on some key intermediate outcomes across three of the four outcome categories assessed. Under the LTA theory of change, continuation of such impacts over the activity lifetime is expected to lead to significant improvements in longer terms outcomes, such as increased agricultural productivity and household income. The midline analysis did not find statistically significant impacts for many of the outcomes assessed at this stage. However, this may not be surprising given that the analyses measure impacts for activities that have been underway for only six months. The generally low proportion and lack of change on household familiarity with land laws for the treatment group may indicate that project messaging on this has not yet taken hold.

Additionally, households that have only recently obtained their CCROs and begun to understand their potential benefit for securing their landholdings may not yet have experienced a lower expropriation risk, or changed their land investment behavior accordingly. Overall, the midline results (1) indicate that achievement of some of the anticipated LTA impacts appears to be underway, (2) confirm the validity of the IE design and sample power, (3) highlight the role endline qualitative data are likely to play in helping to explain impacts at endline, and (4) confirm the utility of measuring longer term outcomes as planned at endline.

## I INTRODUCTION

This baseline and midline report corresponds with the impact evaluation (IE) of the Feed the Future (FTF) Tanzania Land Tenure Assistance (LTA) activity commissioned by the Office of Land and Urban in the United States Agency for International Development’s Bureau for Economic Growth, Education, and Environment (USAID/E3/LU). The E3 Analytics and Evaluation Project<sup>3</sup> designed and is implementing the evaluation. The evaluation uses a randomized controlled trial (RCT) design to test how mobile mapping and facilitation of land tenure certification affect income, women’s empowerment, dispute prevalence, and other factors related to land use and tenure security in Iringa District, Tanzania. Data collection for this evaluation occurred during two phases to account for potential contextual challenges. Annex A provides USAID’s statement of work (SOW) for the evaluation.

This report provides findings from Phase II baseline data collection for the IE – which includes a snapshot of key demographics, household characteristics, and outcome variables – and Phase I midline follow-up data collection. The document:

- Describes and summarizes findings for the Phase II baseline,
- Assesses the balance between treatment and control groups for the Phase II baseline,
- Compares the Phase I and Phase II baseline villages across treatment and comparison groups, and
- Summarizes and analyzes data for the Phase I baseline and Phase I midline.

## 2 LTA ACTIVITY BACKGROUND

### 2.1 TANZANIAN LAND CONTEXT

The Tanzanian land rights system is based on public ownership of land. All land is owned by the state and held in trust by the president. The majority of land in Tanzania is designated as Village Land, which is governed by the 1999 Village Land Act. The act recognizes the rights of villages to hold and administer land according to customary law. Individuals who use or occupy Village Land have the right to obtain formal documentation of their use rights via a Certificate of Customary Right of Occupancy (CCRO), issued by local government.<sup>4</sup>

In practice, most villagers do not have CCROs for their plots and lack formal documentation of their land rights (Pederson 2010). In many villages, the land use demarcation and mapping required to issue the documents has not yet been completed. Moreover, the district land offices (DLOs) responsible for issuing CCROs frequently lack the capacity to do so, and rural land users are often unaware of their land rights under the law.

Meanwhile, multiple factors contribute to increasing pressure on land, particularly in the Southern Agricultural Growth Corridor of Tanzania (SAGCOT) region. The confluence of climate change, population growth, and the regular migration of pastoralist communities to the region causes tensions over land and give rise to many types of disputes at various levels (Mwamfupe 2015). Large-scale agricultural investments are increasing in the area, leading to insecurity on the part of smallholders, due to weak land rights protection and limited bargaining power (Deininger 2011). Recognition is increasing on the part of the Government of Tanzania (GOT) and the donor community that improving the security of land rights is essential to protect the rights of smallholders, reduce disputes and tensions, and maximize the economic potential of the region.

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<sup>3</sup> Management Systems International (MSI) implements the E3 Analytics and Evaluation Project in partnership with Development and Training Services, a Palladium company, and NORC at the University of Chicago.

<sup>4</sup> For more on Tanzania’s land tenure system, see USAID Country Profile, “Land Tenure and Property Rights: Tanzania,” at [https://www.land-links.org/wp-content/uploads/2016/09/USAID\\_Land\\_Tenure\\_Tanzania\\_Country\\_Profile.pdf](https://www.land-links.org/wp-content/uploads/2016/09/USAID_Land_Tenure_Tanzania_Country_Profile.pdf).

## **2.2 LTA ACTIVITY DESCRIPTION**

The LTA activity, which is a part of the United States Government's Feed the Future (FTF) initiative, is implemented through a four-year, \$6 million contract awarded by USAID/Tanzania to DAI in December 2015. The LTA activity will clarify and document land ownership, support local land use planning efforts, and increase local understanding of land use and land rights in Tanzania. The interventions under the LTA activity aim to increase land tenure security and lay the groundwork for sustainable agricultural investment for both smallholder farmers and commercial investors throughout the SAGCOT and in the value chains of focus for Tanzania's FTF program.

The LTA activity comprises two larger activities (1 and 2) and two smaller activities (3 and 4), described below. Local sustainability is a critical component of the overall activity. The goal of the LTA is to empower district and village land institutions in targeted districts to carry forward the capacity development and land administration process independently, with little or no outside financial support, once the activity concludes. The LTA activity works within the current land management bureaucracy, but helps facilitate formal land certification and education through the following activities:

1. Assist villages and district administrations in completing the land use planning process and delivering CCROs in select villages within two districts (Iringa and Mbeya).
2. Educate and develop the capacity of village land governance institutions and individual villagers to complete the land use planning and CCRO process; effectively manage land resources; respect the land rights of women, youth, and pastoralists; and build agriculture-related business skills.
3. Educate and develop the capacity of district-level land governance institutions in the Mbeya Region to complete the land use planning and CCRO process; effectively manage land resources; respect the land rights of women, youth, and pastoralists; and build agriculture-related business skills.
4. Develop capacity to use the Mobile Application to Secure Tenure (MAST) application throughout the SAGCOT and, nationally, to assist with tenure certification.

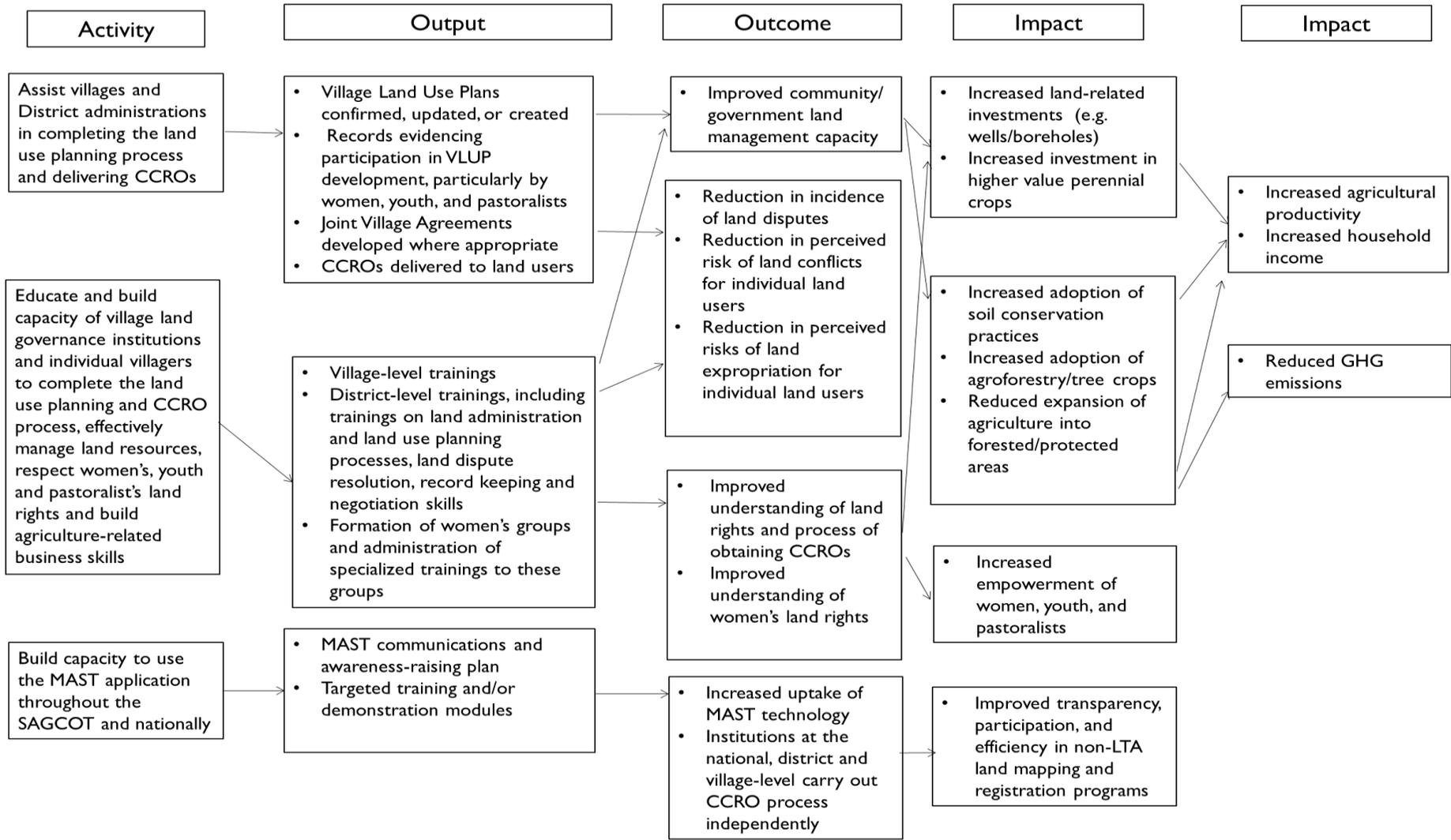
## **2.3 DEVELOPMENT HYPOTHESIS**

USAID envisions that if the LTA activity provides clarification and documentation of land ownership, supports land use planning efforts, and increases local understanding of land use and land rights, then this will lead to increased agricultural investment, reduced land tenure risk, and more empowered people and local institutions. The LTA activity components work in tandem to promote inclusive agricultural development, food security and investment, and institutional capacity. Figure 1 illustrates the causal linkages that USAID envisions for translating results under each of the activities into the LTA activity's intended intermediate and final outcomes.

## **2.4 PROJECT IMPLEMENTATION STATUS**

DAI started implementing LTA in late 2016 in six pilot villages in Iringa District (these results are not included in the IE). Full-scale implementation in 15 Phase I villages began following baseline data collection for the IE in April 2017. A new DAI chief of party took over the LTA activity in early 2017, which resulted in some adjustments to the implementation and evaluation approach. Phase II implementation was originally planned to occur approximately 12 months after Phase I, but due to concerns regarding target achievement, the originally agreed schedule was amended to begin Phase II six months earlier than planned. LTA implementation has occurred in all Phase I villages, and, as of the first draft of this report, most of the Phase II villages. Annex D provides more information on the change in timeline.

**FIGURE 1: THEORY OF CHANGE FOR THE LTA ACTIVITY**



### **3 EVALUATION BACKGROUND PURPOSE, AUDIENCES, AND USES**

This IE comes at an opportune time, as USAID and the GOT are already investing elsewhere in land tenure programming while recognizing that additional research is needed to strengthen the evidence base of how land rights clarification and documentation affects investment, the incidence of disputes, women's empowerment, and tenure security. While USAID and implementers from international development organizations and non-governmental organizations (NGOs) have been exploring different approaches for documenting land ownership and sustainable land investment, few rigorous evaluations have measured the impact of more formal approaches and outcomes from customary tenure systems.

#### **3.1 PURPOSE**

The purpose of this IE is to provide USAID with evidence on the impacts of its investment in the LTA activity, and to contribute to research on the impacts of land mapping, registration, and formalization in rural customary land tenure settings in Tanzania. The results of this evaluation will be made widely available to assess lessons learned and, as applicable, encourage replication within or beyond Tanzania. As such, this evaluation will apply USAID's *Evaluation Policy* guidance with respect to using the most rigorous evaluation design and methods possible to demonstrate accountability for achieving results. The evaluation is also designed to capture practical lessons from USAID's experience with increasing sustainable agricultural investment by securing land tenure through first-time registration.

#### **3.2 AUDIENCE**

The evaluation is aimed at several audiences. The findings are expected to be of value, from an accountability and learning standpoint, to USAID, specifically USAID/E3/LU and the USAID/E3 Office of Global Climate Change, as well as the Tanzania Mission. Findings and lessons learned from this evaluation will also be of interest to the GOT and donor community active in the sector. Both aim to scale CCRO delivery rapidly across Tanzania. DAI and other practitioners in the land tenure sector working to document customary land rights will also find the evaluation useful. Finally, the evaluation will also be relevant to donors such as those involved with the Land Tenure Support Program, a large-scale effort funded jointly by the United Kingdom's Department for International Development, the Swedish International Development Cooperation Agency, and the Danish International Development Agency, as well as implementers and scholars generally interested in its important contribution to the evidence base on land tenure interventions.

#### **3.3 INTENDED USE**

This evaluation will inform the design of future donor and government activities that aim to improve tenure security and generate economic benefits by strengthening land rights.

## 4 EVALUATION DESIGN

### 4.1 THEORY OF CHANGE

Figure 1 illustrates the causal linkages that USAID envisions for translating results under each of the activities<sup>5</sup> into LTA's intended intermediate and final outcomes. By contributing to the issuing of CCROs to land users, as well as education on the land laws and capacity-building components, the LTA activity will contribute to improved tenure security and reduced incidence of land disputes. These outcomes will, in turn, spur increased investment in agriculture, as land users change their behavior in response to stronger incentives brought about by improved security. It is expected that women, youth, and pastoralists who receive a CCRO will experience a greater sense of empowerment. Empowerment should also result more broadly from LTA outreach and education on land laws which protect the rights of women, youth, and pastoralists. Developing Village Land Use Plans (VLUPs), as well as some of the trainings for village and district officials, will improve the capacity of village and government institutions to manage land resources. This includes identifying and maintaining protected areas, establishing or strengthening the management of communal forest areas or woodlots, limiting excessive expansion of areas under cultivation, and implementing other environmental management practices or sustainable land uses within villages. Finally, activities under LTA to raise awareness about MAST and build capacity to use it within the GOT and donor community should result in greater uptake of the MAST technology in future land mapping and registration projects. This would encourage to more transparent, participatory, and efficient processes to issue CCROs.

The IE is limited to measuring LTA's impacts on the direct beneficiaries of the activity through the issuing of CCROs and LTA's outreach and education component (i.e., the first two "activity" boxes in Figure 1). Assessing the extent to which other efforts to issue CCROs have taken up the MAST technology would require different data sources and methods, and would likely require a longer timeframe as well. Thus, the last benefit stream in Figure 1 will be beyond the scope of this IE.

### 4.2 EVALUATION QUESTIONS

The LTA IE addresses five questions derived from the theory of change, shown in Table 3. The evaluation team developed and finalized these questions in collaboration with USAID.<sup>6</sup>

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<sup>5</sup> Figure 1 shows only three activities, since Activity 3 is specific to Mbeya District and this IE focuses solely on LTA activities in Iringa District. This theory of change diagram has been updated since the SOW shown in Annex A, with USAID's approval.

<sup>6</sup> The evaluation questions outlined in this section have been revised since the SOW provided in Annex A was prepared. These changes have been approved by USAID as part of the evaluation design proposal.

**TABLE 3: THEMATIC AREAS OF INVESTIGATION AND EVALUATION QUESTIONS**

Thematic Area	Evaluation Questions
1. Tenure security and land management	1. In what ways and to what extent do landholders who have received formal land documentation through the assistance of LTA perceive their land rights to be more secure?
2. Land disputes	2. To what extent are landholders who have received formal land documentation through the assistance of LTA less likely to experience land disputes? 2.1 What kinds of disputes (if any) are affected and what are the mechanisms by which LTA affects them?
3. Investment and land use	3. To what extent do landholders who have received formal land documentation through the assistance of LTA change their investment and land use decisions in a manner that reflects strengthened incentives resulting from increased tenure security? 3.1 What (if any) are the specific decisions that are affected and how does LTA influence them?
4. Empowerment	4. To what extent do the LTA outreach and communication activities, as well as mapping, verification, and the formal registration of land, lead to a greater sense of empowerment on the part of women, youth, and pastoralists? 4.1 What (if any) are the specific aspects of empowerment that are affected and how does LTA influence them?
5. Economic and environmental outcomes <sup>7</sup>	5. To what extent do the LTA interventions to strengthen land tenure lead to increased agricultural productivity, household income, and wealth, as well as more environmentally sustainable land-use practices and associated environmental benefits? 5.1 Which (if any) of these outcomes are affected and how does LTA influence them?

### 4.3 EVALUATION DESIGN

The goal of an IE is to generate objective, scientifically valid evidence of the *causal* impact of an intervention. The central methodological consideration for an IE is its approach to establishing causality. The challenge in this regard arises because, for most interventions, the outcomes of interest are affected by a range of factors in addition to the intervention itself. For example, in the present context, one would expect beneficiaries of the LTA activity to experience increases in agricultural earnings as a result of their participation in the activity. To separate the impact of the intervention from the influence of other factors, IEs establish the causal impact of the intervention on an outcome for a beneficiary population by considering what *would have happened* to that beneficiary population over the same period of time in the absence of the intervention. To represent what would have happened, IEs use a control group to represent the counterfactual, i.e., the hypothetical outcomes for the beneficiaries in the absence of the activity. An important methodological consideration for IEs is the approach to selecting the control group. The LTA IE uses a clustered RCT design to assign treatment and construct the control group. Prior to activity implementation in the areas of focus for the IE, a set of villages was randomly assigned to either a treatment group that will receive the LTA intervention, or a control group that will not participate in the activity. Such randomized experimental designs are widely considered to be the most methodologically rigorous IE approach. They provide a more convincing demonstration of causality

<sup>7</sup> The economic and environmental outcomes covered in Evaluation Question 5 are expected to unfold over a longer period, hence, the full impact of LTA on these outcomes may not be observable over the timeframe of the evaluation. Thus, the endline analysis will provide a preliminary indication of these impacts, while a more comprehensive assessment would require an additional round of data collection. The evaluation team and USAID will explore the possibility of further data collection pending the endline findings.

than alternative designs that utilize non-random approaches to select a comparison group. An RCT minimizes the potential for selection bias — which occurs when underlying differences between treatment and comparison groups lead to differences in outcomes — by assigning the intervention in a systematically random way.

The IE will measure LTA’s impacts on activity beneficiaries in 30 randomly selected villages<sup>8</sup> in Iringa District. Implementation in these 30 villages will occur in two phases: an initial set of 15 randomly chosen villages beginning in 2017, then a second set of 15 randomly chosen villages beginning in mid-2018. Ideally, all 30 villages would be selected at the outset with a single baseline collected prior to implementation. However, in response to concerns raised by DAI, selection of the villages was designed to take place in two stages prior to the beginning of the two phases of implementation. These original concerns stemmed from the fact that the context of the LTA activity may change over time as village administrative and geographic boundaries shift, an increasingly common occurrence as a village’s population grows. Village subdivision or boundary changes presented implementation challenges. This is because the LTA activity relies on specific satellite imagery and has limited resources to work through VLUPs, sensitization, and other activities without repeating processes for newly created villages. These would be required should a village subdivide. These challenges could also affect the evaluation team’s estimation strategy if changes occur in the local context, since any adjustments will require adding some kind of control or weights, and likely reduce analytical precision. Under the original design, a list of potential LTA activity villages developed in 2016 would not be appropriate later, as a village on the list may merge with another, or split into two villages. Criteria that once made a village suitable for the LTA activity in 2016 thus may no longer apply in later years. To address these potential challenges, the evaluation team proposed a phase-in RCT design in which implementation and evaluation activities would take place gradually and in tandem over the course of two years.

The approach to village selection has been discussed in detail and agreed upon by DAI, USAID, the GOT, and evaluation team. As a first step in this process, the Iringa DLO prepared a master list of 75 villages suggested for potential LTA activity implementation according to its own priorities. From this list, the evaluation team randomly selected 37 candidate villages to allow for 15 Phase I treatment villages, 15 Phase I control villages, and up to seven villages to be eliminated for implementation reasons prior to randomized assignment.<sup>9</sup>

After identifying potential villages, it was necessary to assess the suitability of these villages for LTA implementation. Villages may not be appropriate for implementation for a variety of reasons, such as the presence of other certification outreach programs, inaccessibility, or impending village subdivision. To address these issues, the evaluation team, DAI, and the Iringa DLO collaborated on field reconnaissance in September 2016 to gather information to assess the suitability of each of the 37 candidate villages for implementation. From the remaining Phase I candidate villages, the evaluation team randomly assigned 15 villages to the Phase I treatment, and 15 to the Phase I control group. Two of the remaining villages were designated as “reserve” villages and candidates for implementation if implementation could not take place in the originally designated treatment villages.

Phase II villages were originally slated for selection prior to spring 2018 using a similar process. However, after Phase I implementation, both DAI and USAID raised concerns about the activity’s ability to achieve implementation goals under a phase-in approach. In addition, LTA activity staff found that the data collected during field reconnaissance contained critical inaccuracies; for example,

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<sup>8</sup> The number of villages in the study is determined by the size of the activity. In 2016, LTA began implementing in a preliminary set of non-randomly selected villages in Iringa, and is also implemented in a set of five test villages in Mbeya. These villages are not included in the IE and were not selected from the list of potential IE villages. The selected 30 villages were chosen randomly after accounting for key factors such as whether the village planned on subdividing, accessibility during the rainy season, and the presence of villagers capable of running the MAST application.

<sup>9</sup> To improve balance, the initial 37 villages were selected by stratifying by constituency and blocking on whether the village had a VLUP, geographic location (constituency and ward), and the number of parcels in the village.

villages that reported having a VLUP turned out not to have one or to have one that was expired. Table 4 shows the original phase-in schedule, while Table 5 shows the revised schedule.

**TABLE 4: ORIGINAL PHASE-IN DESIGN OF THE LTA IE**

Implementation Start	Control	Treatment
April 2017	15 randomly chosen villages do not receive LTA	15 randomly chosen villages receive LTA
April 2018	15 randomly chosen villages do not receive LTA	15 randomly chosen villages receive LTA

**TABLE 5: REVISED PHASE-IN DESIGN OF THE LTA IE**

Implementation Start	Control	Treatment
April 2017	15 randomly chosen villages do not receive LTA	15 randomly chosen villages receive LTA
October 2017	15 randomly chosen villages do not receive LTA	15 randomly chosen villages receive LTA

Prior to Phase II, the Phase I treatment, control, and reserve villages, as well as any villages that were unsuitable for implementation, were removed from the original “master list” of 75 villages compiled by the DLO. The remaining villages were reviewed in coordination with the GOT and DAI to determine if any should be removed from consideration due to circumstances such as changing administrative boundaries or new land tenure programs. To the greatest extent possible, the evaluation team sought to adhere to the original list and remove villages only when necessary.

For the remaining villages on the DLO list, the evaluation team and DAI decided not to repeat the field reconnaissance process to assess suitability for implementation. Rather, DAI and the DLO reviewed the list and assessed whether there were any obvious issues with including the remaining villages based on recent field work. As in Phase I, the evaluation team then randomly assigned 15 to treatment, 15 to control, and up to five remaining villages as reserve. Annex D explains some of the challenges this posed to the original evaluation design.

#### 4.3.1 RANDOM SELECTION

The randomization procedure for the Phase II baseline was slightly different from the approach used to randomize treatment for Phase I villages. Prior to Phase I, the evaluation team conducted a field reconnaissance trip in coordination with DAI to collect data on each village that could potentially be assigned to treatment. Given that data collection for the Phase II baseline took place earlier than expected and that the new DAI chief of party decided there was sufficient information about the potential Phase II villages, no additional pre-selection data collection was done. This introduces some divergence in design fidelity across the two phases, but it is not considered a major limitation.

In Phase I, randomization was based on data collected during field reconnaissance using a stratified random sampling approach. For Phase II, the evaluation team took a similar approach using data from the DLO to group villages into pairs based on the following strata:

- Constituency
- Ward
- Population size
- Number of CCROs already issued in the village prior to the LTA intervention
- VLUP status

Villages were paired based on their similarity on these five criteria prioritized in the order shown above (e.g., ward takes precedence over similar VLUP status). From here, villages were randomly

assigned within their paired grouping to either the treatment or comparison group. This approach helps improve the comparability of the villages across assignment groups. However, it is still important to test for statistical balance across the groups. This is because stratification only occurred across these five categories, some villages only had partial data (e.g., VLUP status was missing), and there are variables that may affect the outcomes of interest, but were not included in the DLO data, such as the presence of other interventions in the village. The IE is designed to include 30 villages in Phase II. The evaluation team randomly assigned 16 villages to treatment and 16 to control, with the inclusion of two “buffer villages” to allow for adaptation in the implementation approach should DAI face challenges. The evaluation team also collected data from randomly selected buffer villages during Phase I. Section 6.3 addresses differences between the Phase I and Phase II baselines. The evaluation team found no major differences between the two phases, despite the alternation to the assignment procedure.

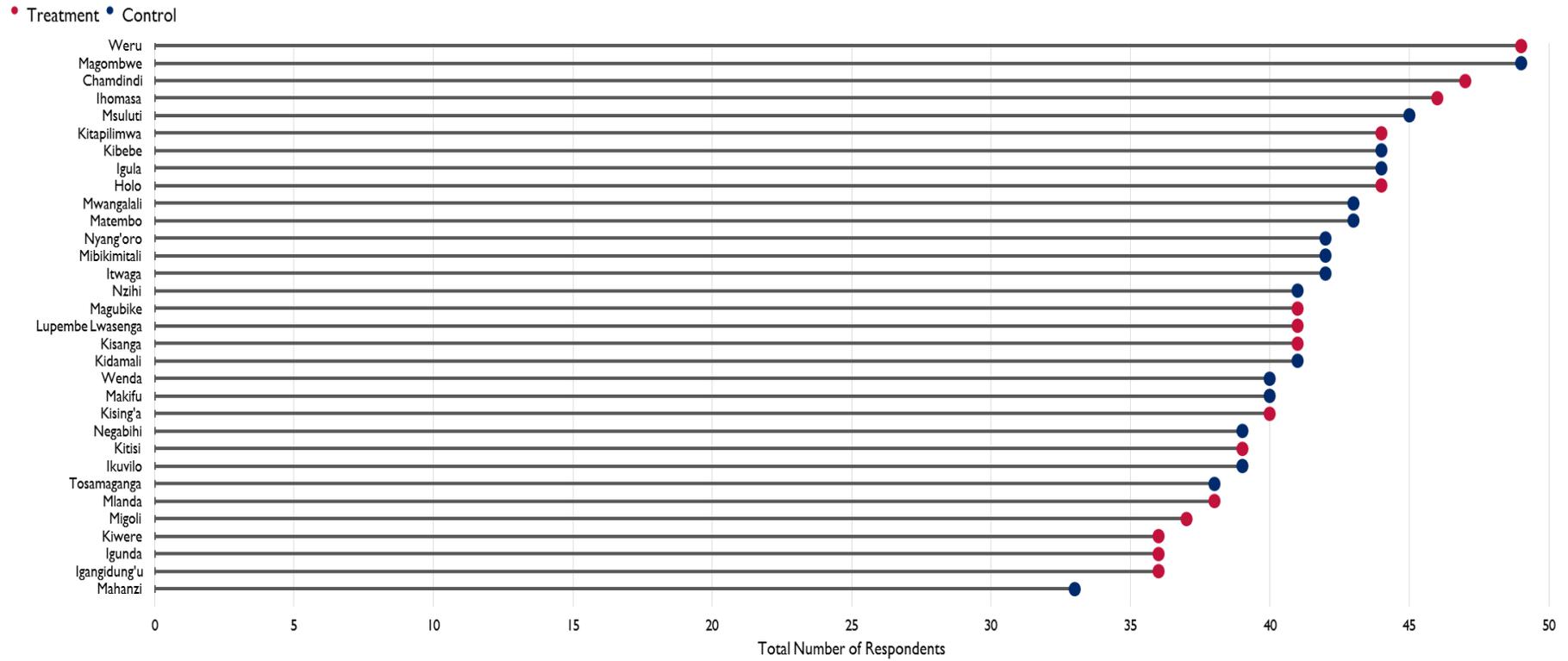
#### **4.4 BASELINE DATA COLLECTION**

The evaluation team conducted baseline data collection for Phase II villages, and the midline data collection for Phase I villages, in September and October 2017. Research Solutions Africa (RSA), a Kenyan survey research firm with an office in Dar es Salaam, conducted these data collection rounds.<sup>10</sup> The RSA survey team included 35 enumerators, seven team leaders, and an overall survey supervisor working with a local coordinator from the evaluation team. For the Phase II baseline, the sampling frame consisted of households within the 32 Phase II villages across 19 wards in Iringa District. The evaluation team did not tell enumerators, field supervisors, or associated staff which villages were assigned to receive LTA interventions and which would serve as control villages. The target sample was 25 households per village, and one to two respondents per households, depending on availability. Figure 2 shows the number of survey respondents in each village.

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<sup>10</sup> RSA conducted the Phase I baseline.

**FIGURE 2: 1,320 PHASE-II SURVEY RESPONDENTS IN 32 VILLAGES IN IRINGA DISTRICT**



#### 4.4.1 HOUSEHOLD SAMPLE SELECTION

Seven field teams, each consisting of four enumerators and a field supervisor, conducted the household surveys. When possible, enumerators worked in pairs, with one enumerator interviewing the male head of household and another the primary wife or spouse of household. When both male and female respondents were available, enumerators sought to interview female respondents outside the earshot of male respondents, such as inside the home, while the husband was interviewed outside of the home. However, in some cases, only one member of the household was home due to farming or market activities. In those cases, the team surveyed only one household member.

The survey team used systematic random selection to find respondents. After arriving in a village, the team followed these steps:

1. Met with the village leader, usually the village chairman. With guidance from the village leader, the teams would split up, each taking a direction and starting a random walk from an appropriate point (e.g., from the nearest intersection in the village or at the village meeting place).
2. Each enumerator pair applied a skipping interval based on the percentage of target households for the village to the total village population, with a minimum skipping interval of 10. Once a team reached a target household, it would then walk to, at a minimum, the 10<sup>th</sup> household after the one it just visited.
3. Informed consent was required for all household interviews. If a respondent refused to be interviewed or decided that they did not want to continue midway through the interview, the enumerator would then move on to the next household based on the skipping interval.

Prior to the start of data collection, the evaluation coordinator and local coordinator, along with RSA's field supervisor and six enumerators, implemented a pretest for the baseline survey in Kihanga, Kidilo, Ulata, and Isaka villages in Iringa District. The goal of the pretest was to refine the relevance, sequencing, and wording of survey questions, as well as ensure that the mobile platform accommodated the correct skip patterns and logic checks in the survey. The pretest villages were purposively selected based on their omission from the evaluation field reconnaissance process in 2016 and random assignment ahead of data collection to avoid potentially pre-testing the survey on respondents who may receive the survey again at a later date, which could bias their responses. The evaluation coordinators and RSA field supervisor met with the head land officer at the Iringa DLO to explain the evaluation process, share results from Phase I, and maintain local support for the overall evaluation. DLO personnel were helpful in obtaining village leader contact information throughout the data collection process.

In each pretest village, the survey team identified target households using a systematic random sampling approach, with the applicable skipping interval per village ranging from two to four. In each identified household, the team interviewed the male and female household heads, as appropriate, and simultaneously, if possible. The pretest team completed 54 interviews and went through 53 iterations of the survey instrument and daily updates to the mobile platform, Dooblo Survey to Go.<sup>11</sup> RSA scripted English and Swahili versions of the questionnaire using the mobile platform to ensure translation accuracy and track changes to the software.

Phase II baseline data collection activities took place from October 16 through November 17, 2017. In addition to the local coordinator and RSA field supervisor, each group of five enumerators was led by an enumerator team leader who was responsible for team oversight, communicating with village leaders, and conducting sit-in checks, call-backs, and back checks to ensure that enumerators were properly conducting the survey. The field supervisor managed enumerator assignments, held daily check-ins with enumerator team leaders, and undertook random data quality checks. The use of electronic data collection allowed RSA to submit raw data to the evaluation coordinator as an additional level of oversight. The evaluation coordinator checked variation in duration, assessed the

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<sup>11</sup> See [www.dooblo.net](http://www.dooblo.net).

distribution of interview types by team and enumerator, and assessed missing and “don’t know” responses to ensure survey implementation fidelity.

Each participant provided verbal informed consent after being read a statement about the purpose of the evaluation and the content of the survey. The survey team assured participants that their involvement was voluntary and could be withdrawn at any point. Enumerators further assured respondents that their answers would be kept confidential and all data would be anonymized prior to any publication or use.

The survey team made follow-up visits to households in the following situations:

- When there was no one in the household at the time of initial (first and second) visits.
- When there were no adult household members/target respondents at the time of the visit.
- When the target respondent(s) were busy at the time of the initial visit, and requested that enumerators come back at a later time.
- When the enumerators were not able to complete either one or all of the household interviews during their previous visit, but it was still possible for them to return at a later time.

During the Phase II baseline, and excluding the pre-test, there were 533 sit-ins (40 percent of surveys) by the survey firm field team leaders, field coordinator and project manager, as well as 220 back checks (17 percent of surveys) and 61 call backs (5 percent of surveys) to ensure data accuracy and quality.<sup>12</sup>

#### 4.5 SURVEY INSTRUMENT

Baseline data collection for Phase II consisted of two main household interview surveys:

1. The “**Head of Household Survey**” was given to the individual who identified as the head of household when enumerators presented themselves at the house for data collection. This survey lasted around 75 minutes.
2. The “**Wives’ Survey**” was given to the primary spouse/partner of the head of household. This survey lasted around 40 minutes.

The survey team collected data via mobile devices. Both surveys included questions on disputes, self-efficacy, loans, decision-making, and familiarity with land laws. The head of household survey also included a sketch map portion to use as a reference for follow-up interviews. The wives’ survey included a time-use component that asked respondents to describe their activities in the previous 24 hours. All surveys were geo-coded for additional quality assurance and to facilitate follow-up data collection rounds. Annex B provides the survey questionnaire the evaluation team developed, and Table 6 shows the questionnaire’s 13 modules. Most questions are based on validated questions from the Tanzanian National Panel Survey questionnaires.

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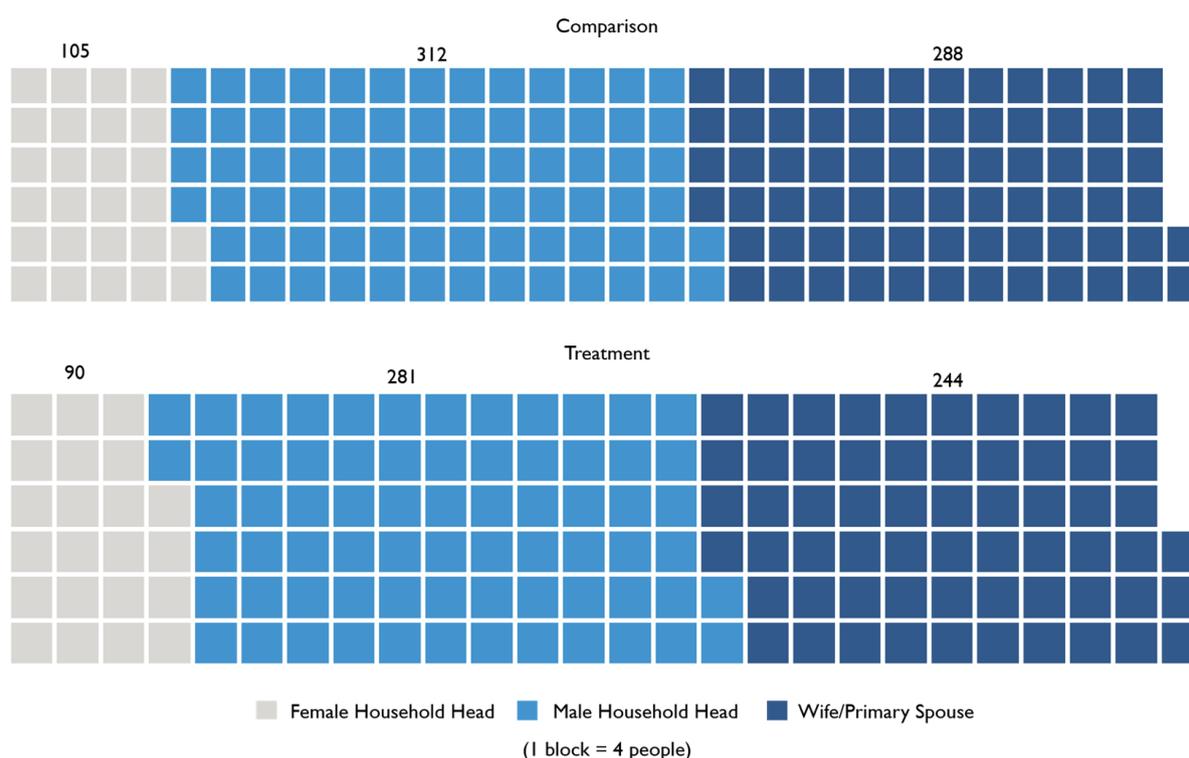
<sup>12</sup> Sit-ins include a field supervisor being present for the entirety of the interview; back checks consist of supervisors randomly re-interviewing respondents on select survey items to ensure accuracy; and call backs were conducted by contacting respondents via mobile phone to ask about select survey items and to ensure accuracy.

**TABLE 6: SURVEY QUESTIONNAIRE MODULES**

Modules		Indicators
I.	Household Roster and Information	<ul style="list-style-type: none"> <li>• Age, schooling, marital status</li> <li>• Household size, number of adults and children</li> <li>• Economic activity</li> </ul>
II.	Agricultural Organization, Services	<ul style="list-style-type: none"> <li>• Farmer cooperative involvement</li> <li>• NGO activity involvement</li> </ul>
III.	Landholdings and Characteristics	<ul style="list-style-type: none"> <li>• Parcels owned and rented, parcel size, documentation status</li> <li>• Parcel acquisition method, inheritance, planning</li> <li>• Topography and physical characteristics of parcels</li> <li>• Irrigation, fallowing, and parcel improvements</li> </ul>
IV.	Agricultural Production—Annual Crops	<ul style="list-style-type: none"> <li>• Parcels cultivated, crops grown by parcel, tools used</li> <li>• Seeds planted, amount paid for seeds</li> <li>• Use of inputs (e.g., fertilizer), cost of inputs, use of hired labor</li> <li>• Amount harvested, quantity sold, income from sales</li> </ul>
V.	Agricultural Production—Perennial Crops	<ul style="list-style-type: none"> <li>• Parcels cultivated, crops grown by parcel</li> <li>• Use of intercropping</li> <li>• Trees planted, planned use for trees</li> <li>• Amount harvested, quantity sold, income from sales</li> </ul>
VI.	Perception of Land Rights	<ul style="list-style-type: none"> <li>• Expropriation</li> <li>• Land tenure security</li> <li>• Knowledge of land laws, LTA, and CCROS</li> </ul>
VII.	Land Disputes	<ul style="list-style-type: none"> <li>• Dispute incidence</li> <li>• Nature of disputes</li> <li>• Dispute resolution</li> </ul>
VIII.	Non-Agricultural Income, Consumption, and Assets	<ul style="list-style-type: none"> <li>• Asset inventory</li> <li>• Livestock inventory</li> <li>• Household construction materials</li> <li>• Formal, non-farm employment</li> </ul>
IX.	Household Savings, Borrowing, and Shocks	<ul style="list-style-type: none"> <li>• Borrowing amount and lender</li> <li>• Household shocks</li> </ul>
X.	Food Security	<ul style="list-style-type: none"> <li>• Incidence of food insecurity in the past 12 months</li> </ul>
XI.	Self-Efficacy	<ul style="list-style-type: none"> <li>• Ability to make decisions, confidence, problem solving</li> </ul>
XII.	“Wives’ Survey”	<ul style="list-style-type: none"> <li>• Demographic information, education level</li> <li>• Expropriation in the event of husband’s death</li> <li>• Income activities, decision-making, disputes</li> <li>• Borrowing</li> <li>• Self-efficacy</li> <li>• Familiarity with land laws, LTA, and CCROs</li> <li>• Time allocation</li> </ul>
XIII.	Sketch Map	<ul style="list-style-type: none"> <li>• Respondent-drawn map showing parcels, terrain, and crop allocation</li> </ul>

Figure 3 shows the final sample sizes that resulted from the sampling process. In all but two villages, the enumerators were able to visit the planned number of households. The remoteness of the study area villages and the fact that many household members were unavailable at certain parts of the day due to farming activities meant that enumerators often made follow-up visits to the selected households. The evaluation team set out to interview both male and female representatives in each household, but this was not always possible. Phase II data collection visited 807 households, 57 more than the 750 planned as part of the evaluation design.

**FIGURE 3: SURVEY RESPONDENTS BY ASSIGNMENT AND RESPONDENT TYPE**



#### 4.6 CHALLENGES ENCOUNTERED DURING DATA COLLECTION

Baseline data collection occurred with limited interruption. RSA faced several scripting issues during the pretest period, and there were several scripting anomalies that took multiple days to resolve. There were a few technical issues related to uploading data given the remote location of a few of the villages; however, these issues posed more of a problem for conducting pretest quality assurance than for the full survey deployment. Each survey was geotagged to allow for additional data quality oversight and to help with respondent tracking for the next phase of data collection. During pretesting and baseline data collection, finding respondents who were home proved challenging in three of the villages where farming parcels are located far from where people actually live.

## 5 BASELINE FINDINGS

This section presents baseline findings on key demographics, household characteristics, and outcome variables between the two assignment groups in Phase II. The findings provide a snapshot of the characteristics, conditions, and outcomes that the IE will measure in the study area. A brief discussion of the differences in summary statistics between Phase I and Phase II is presented following this section.

It is worth noting that, in the Phase I baseline report, the evaluation team presented results only for the treatment group across respondent types. The team made the assumption that comparison group results should be similar, given adequate balance and appropriate randomization. This document reports summary baseline findings across assignment types, since analysis will proceed across these groups (and, secondarily, across respondent types within each of these groups). The Balance and Power section examines statistical differences between the treatment and control groups, and confirms sufficient study power within the context of inference and effect estimation for the evaluation. Both treatment and comparison groups are included in this Phase II baseline report to help readers compare the midline Phase I results and the results reported below.

## 5.1 HOUSEHOLD CHARACTERISTICS

Table 7 shows general characteristics of respondents by assignment type. There are a total of 615 respondents in the treatment group and 705 in the comparison group, with 371 and 417 heads of household respondents in each respective group (see Figure 3). In general, key characteristics between assignment groups overlap. The two assignment groups were very similar. Seventy-seven percent (n=472) of the treatment group and 75 percent (n=528) of the comparison group reported primary education, while 20 percent (n=143) of the comparison group and 18 percent (n=114) of the treatment group household heads (n=67) reported no schooling.

**TABLE 7: BASIC HOUSEHOLD CHARACTERISTICS BY ASSIGNMENT**

Variable	Treatment					Comparison				
	n	Mean	SD	Min	Max	n	Mean	SD	Min	Max
Age	615	44.49	14.42	19	97	705	46.12	15.45	18	102
Cooperative membership (y/n)	371	0.24	0.43	0	1	417	0.22	0.42	0	1
Education Level*	615	0.86	0.46	0	2	705	0.85	0.48	0	3
Miles to Iringa Town	570	30.98	15.23	7.92	59.21	657	27.59	12.8	3.18	59.21
Number of HH Members	371	4.48	2.49	1	26	417	4.37	2.16	1	17

\*0 = No schooling, 1 = Primary, 2 = Form, 3 = University

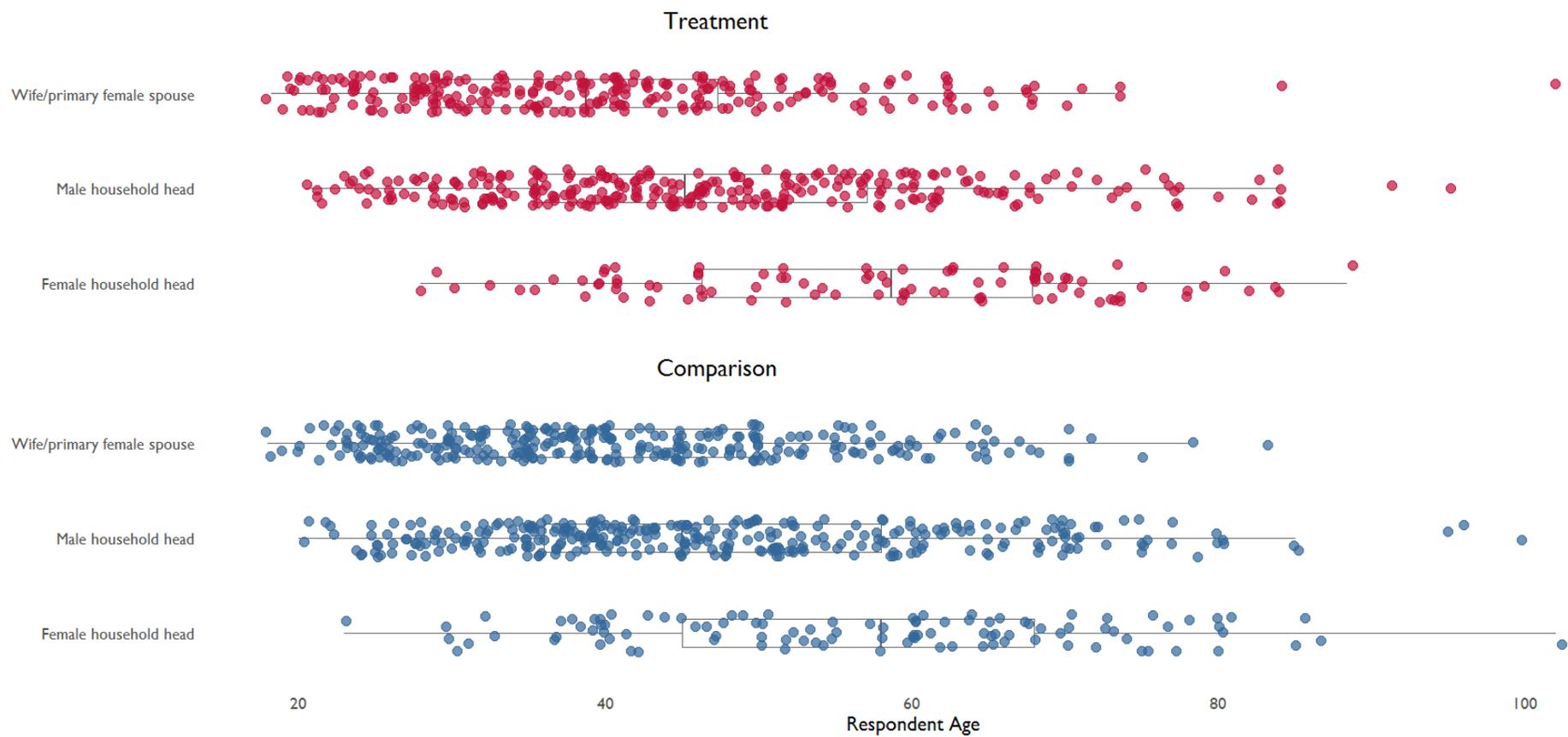
Distance to markets is one of many factors that can affect the outcomes of interest. The evaluation team used the baseline data to calculate travel distance via road utilizing the Google Developer API. Using the API, the evaluation team wrote a script to cycle through each survey geo-stamp and determine the Google maps' driving distance and drive time. It is important to note that officially mapped roads into many areas of Iringa are, at best, estimates. For this reason, some driving directions are unable to be calculated, resulting in slightly lower sample sizes for these statistics. Villages in both assignment groups are located, on average, around 30 miles to Iringa Town, the main economic hub of Iringa District and the home of the Iringa DLO.

The evaluation team also investigated the age distribution of respondents. As Figure 4 shows, the reported ages were somewhat similar across assignment groups and respondent types. However, it is worth highlighting the variation across the assignment groups to better understand potential imbalance, since age may affect the ability of LTA activity participants to benefit. The median age for male household heads in the treatment group is 44, with 90 as the highest age reported; for female household heads, the median is higher at 56.5, with 84 as the highest age reported. Similarly, the comparison group's male household head median age was 45, with the oldest respondent reporting an age of 100; for female household heads, the median age was 58, with the oldest respondent reporting her age as 102.

Survey methodologists have long known that self-reported age can be a fraught metric.<sup>13</sup> Despite well-known challenges in self-reported metrics, it is important to understand whether villagers in both treatment and comparison groups generally report the same distribution of ages or other self-reported measures that may affect the outcomes. As shown above, this does appear to be the case, but with only minor variation between the two assignment groups.

<sup>13</sup> S. Denic, F. Khatib, and H. Saadi, "Quality of Age Data in Patients from Developing Countries," *Journal of Public Health* 26 (2004): 168–71.

**FIGURE 4: AGE BY ASSIGNMENT GROUP AND RESPONDENT TYPE**



**TABLE 8: LAND RIGHTS AND TENURE SECURITY VARIABLES**

Variable	Treatment					Comparison				
	n	Mean	SD	Min	Max	n	Mean	SD	Min	Max
Compared to one year ago, do you think the possibility that someone could try to take one of your parcels has increased? (I=Y, 0=N)	371	0.06	0.24	0	1	417	0.05	0.22	0	1
Do you have familiarity with land laws (I=Y, 0=N)	615	0.09	0.28	0	1	705	0.07	0.25	0	1
Expropriation possible in the next five years (I=Y, 0=N)	371	0.07	0.25	0	1	417	0.04	0.2	0	1
Heard of CCROs (I=Y, 0=N)	615	0.60	0.49	0	1	705	0.61	0.49	0	1
Is there a risk that someone will take over one of your plots if you leave it fallow? (I=Y, 0=N)	371	0.47	0.5	0	1	417	0.46	0.5	0	1
Is there community perception of expropriation risk (I=Y, 0=N)	371	0.11	0.31	0	1	417	0.10	0.29	0	1
Possess land-related documentation (I=Y, 0=N)	615	0.11	0.31	0	1	705	0.14	0.34	0	1
Willingness to pay for a CCRO (in TZS)	370	29,751	60,285	0	500,000	428	25,028	33,010	0	270,000

## 5.2 TENURE SECURITY AND LAND DISPUTES

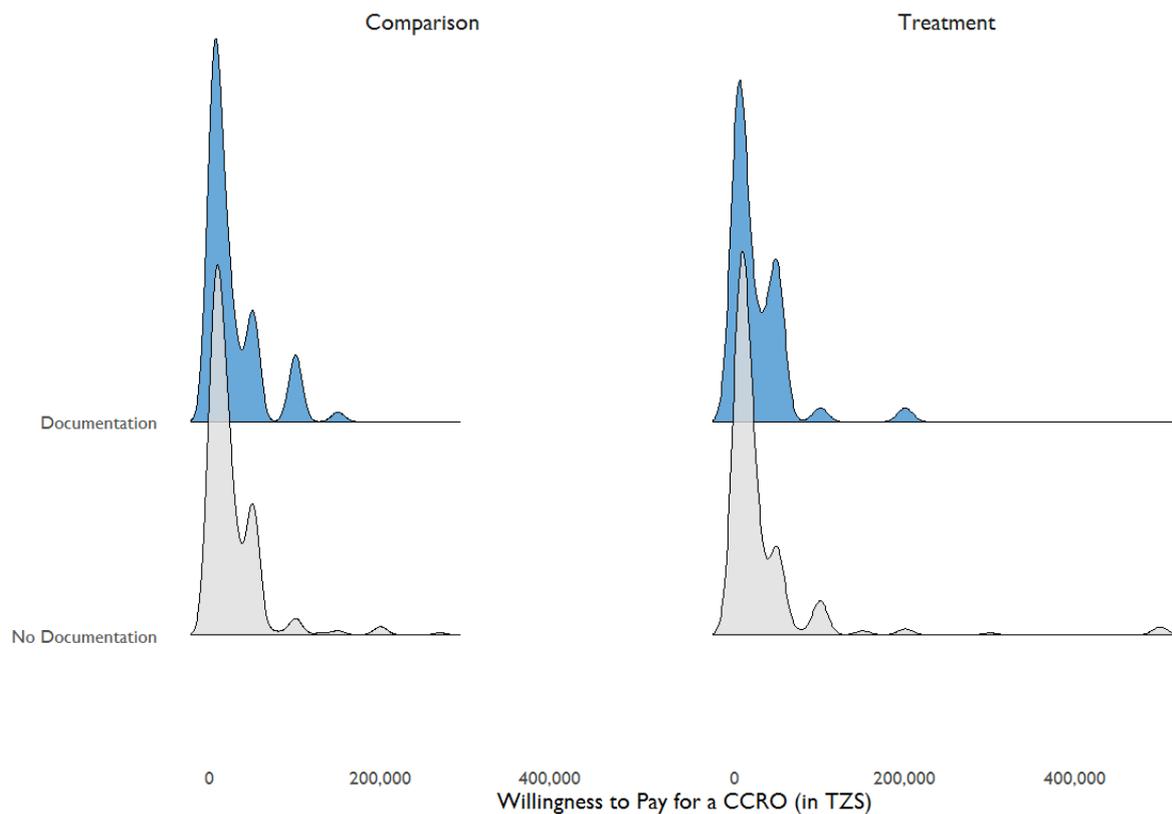
Table 8 presents baseline data related to land rights and tenure security. An increase in the risk of expropriation over the past year was generally perceived to be low, at six and five percent of respondents in the treatment and comparison groups, respectively. However, almost 50 percent of respondents in both assignment groups expressed concerns regarding expropriation due to following. Baseline results also indicate low familiarity with land laws (at nine and seven percent of respondents in treatment and comparison groups, respectively), while the percentage of respondents who had heard of CCROs was close to 60 percent for both assignment groups.

Ninety-five respondents in the comparison group and 62 in the treatment group reported having some kind of land documentation. The baseline survey asked respondents to choose CCRO, Granted Right of Occupancy, Inheritance Letter, or Other Government Document, or to specify some other type of non-government documentation. In the treatment group, 41.3 percent (n=19) of respondents who reported having land documentation said they had a CCRO (this was 3.1 percent of the overall treatment group sample), while 37 percent (n = 17) said they had a Granted Right of Occupancy document (3.8 percent of the overall treatment sample). In the comparison group, 39.5 percent (n =32) of those who reported having some kind of documentation reported having a CCRO (4.5 percent of the overall comparison group sample), while 33.3 percent (n = 27) of those who reported documentation said they had “Other Government Documentation,” and 19.8 percent

(n = 16) said they had a Granted Right of Occupancy. One respondent in the treatment group and two respondents in the comparison group reported having a letter of inheritance.

Respondents who reported having some kind of land documentation reported their willingness to pay (WTP) for CCROs at around 25,000 Tanzanian shillings, on average, in both assignment groups.<sup>14</sup> In contrast, respondents in the treatment group who reported not having any land related documentation reported an average WTP for a CCRO of 30,426 (~13.69 USD), while comparison group respondents with no documentation reported an average WTP of 24,820 shillings (~11.17 USD) (Figure 5). The difference in WTP between those with and without documentation may reflect greater awareness of the actual market costs of CCROs by respondents who have already gone through the process of obtaining the documentation and, thus, have first-hand experience with its associated cost in shillings. As shown in Figure 5, documentation status relative to WTP has a right skewed distribution, but those without documentation have a longer tail. That means there are more respondents in the sample without documentation who report a WTP that is much higher than its typical actual costs, compared to those with documentation who report a smaller WTP range.

**FIGURE 5: WILLINGNESS TO PAY FOR CCROS BY ASSIGNMENT AND LAND DOCUMENTATION STATUS**



<sup>14</sup> One Tanzanian shilling is approximately 0.00045 US dollars, so 25,000 shillings is around \$11.25.

**TABLE 9: DISPUTE-RELATED SUMMARY STATISTICS**

Variable	Treatment					Comparison				
	n	Mean	SD	Min	Max	n	Mean	SD	Min	Max
Border dispute risk in the next five years (I=Y, 0=N)	371	0.15	0.36	0	1	417	0.17	0.37	0	1
Expect disputes to improve, get worse, or not change in the upcoming 12 months*	371	0.37	0.69	-1	1	417	0.41	0.68	-1	1
Improvement, worsening, or no change in disputes over the past 12 months*	371	0.3	0.7	-1	1	417	0.34	0.69	-1	1
Improvement, worsening, or no change in risk of boundary dispute compared to a year ago*	371	-0.29	0.6	-1	1	417	-0.41	0.59	-1	1
Number of disputes in the past 12 months	28	1.21	0.79	1	5	24	1.17	0.38	1	2
Family disputes: severity (0=Not a problem, 1 = A small problem, 2 = A big problem)	371	0.4	0.63	0	2	417	0.51	0.71	0	2
Grazing disputes: severity (0=Not a problem, 1 = A small problem, 2 = A big problem)	371	0.66	0.82	0	2	417	0.69	0.83	0	2
Investor disputes: severity (0=Not a problem, 1 = A small problem, 2 = A big problem)	371	0.09	0.32	0	2	417	0.22	0.54	0	2
Neighbor disputes: severity (0=Not a problem, 1 = A small problem, 2 = A big problem)	371	0.43	0.62	0	2	417	0.55	0.68	0	2
Non-Family land disputes: severity (0=Not a problem, 1 = A small problem, 2 = A big problem)	371	0.32	0.58	0	2	417	0.32	0.56	0	2
Rental disputes: severity (0=Not a problem, 1 = A small problem, 2 = A big problem)	371	0.18	0.42	0	2	417	0.28	0.55	0	2

\*0 = no change, 1 = improve, -1 = get worse

Disputes were reported by about seven percent of the total household head sample. As shown in Table 9, there was an average of a little over one dispute for respondents in both assignment groups. In the treatment group, almost half the sample (n = 182) reported that they expect the incidence of disputes to improve over the next 12 months; the comparison group reported similar findings (n = 215). Overall, disputes were generally reported as inconsequential. There are a few areas where the data show that risk of dispute or perceived dispute severity is problematic for one or both assignment groups. Grazing disputes were perceived to be most problematic across both assignment groups, followed by neighbor disputes.

There were only four villages in the sample in which respondents did not report any disputes. Of the villages that reported disputes, 15 reported more than one dispute, and, as Table 10 shows, seven reported three or more disputes. About 55 percent (n = 34) of total disputes were reported in treatment villages. Most respondents reported only one dispute, if any. In Kisanga, for example, four respondents reported disputes that occurred in the previous 12 months. Of those, one reported five disputes, while the other three each reported one.

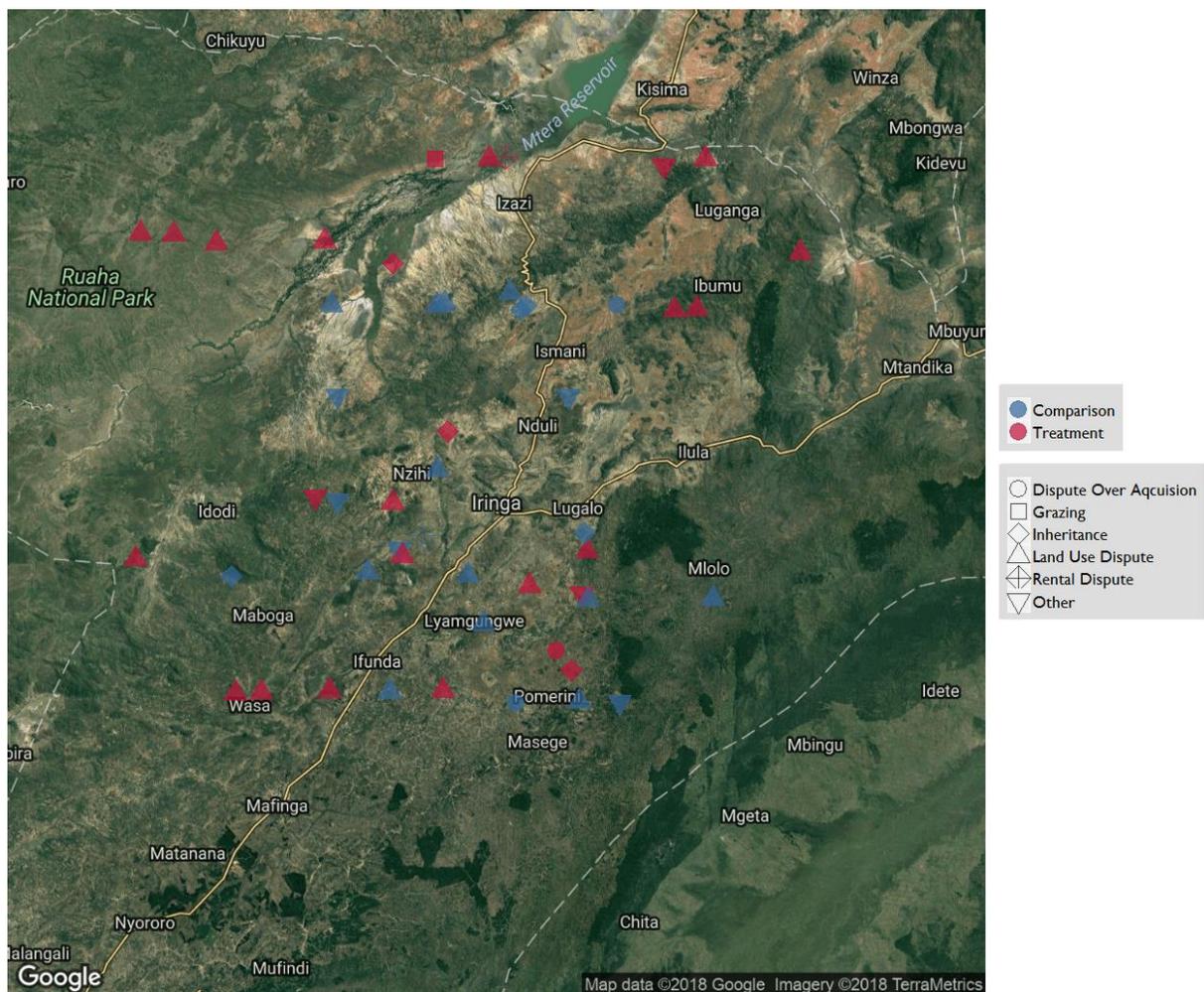
**TABLE 10: VILLAGES WITH THREE OR MORE DISPUTES**

Village	Assignment	Number of Disputes
Kisanga	Treatment	8
Ihomasa	Treatment	5
Migoli	Treatment	5
Nyang'oro	Comparison	5
Mibikimitali	Comparison	4
Chamdindi	Treatment	3
Makifu	Comparison	3

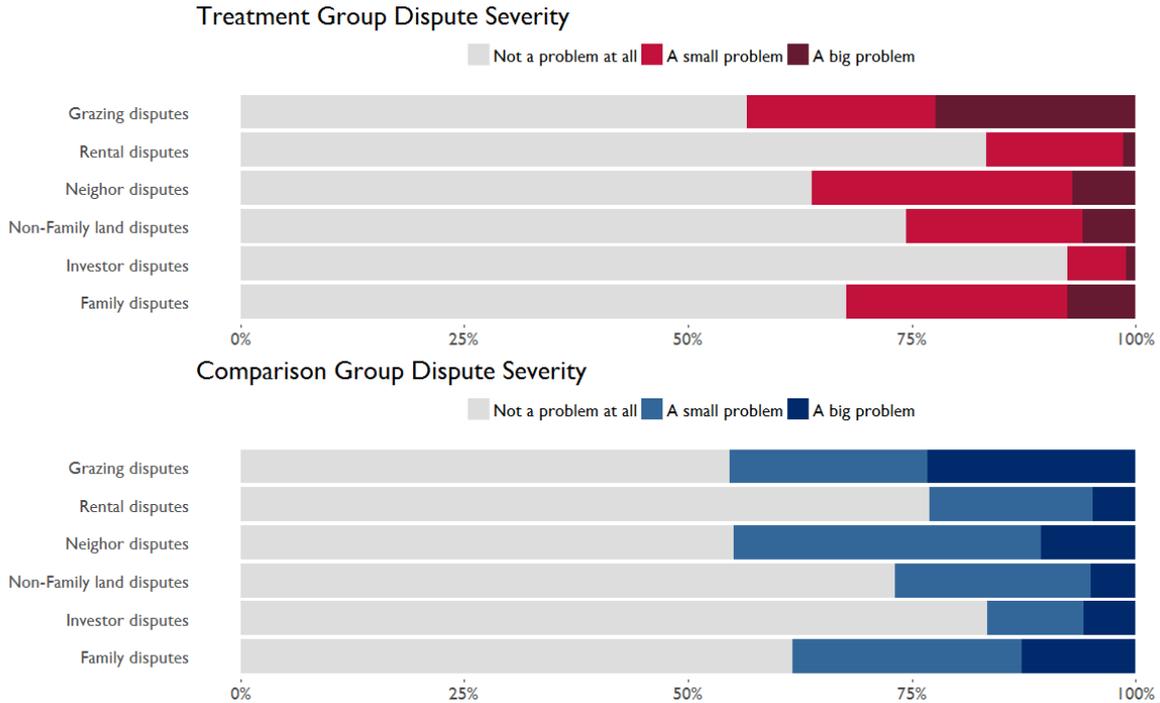
As seen in Figure 6, there is a slight clustering of disputes within villages that reported more than one dispute. In most cases, this clustering can be found where two respondents each reported one dispute within close proximity (i.e., the dispute is with a nearby neighbor). Additional analysis also suggests that there is little clustering among respondents who reported multiple disputes; multi-dispute respondents did not appear to be clustered with respondents who reported only one dispute.

When asked about the severity of specific dispute types, around 50 percent of all respondents in both the treatment and comparison groups felt there was no problem with disputes of various types. There are a few notable exceptions, however, as seen in Figure 7.

**FIGURE 6: MAP OF INDIVIDUAL DISPUTES BY ASSIGNMENT GROUP**

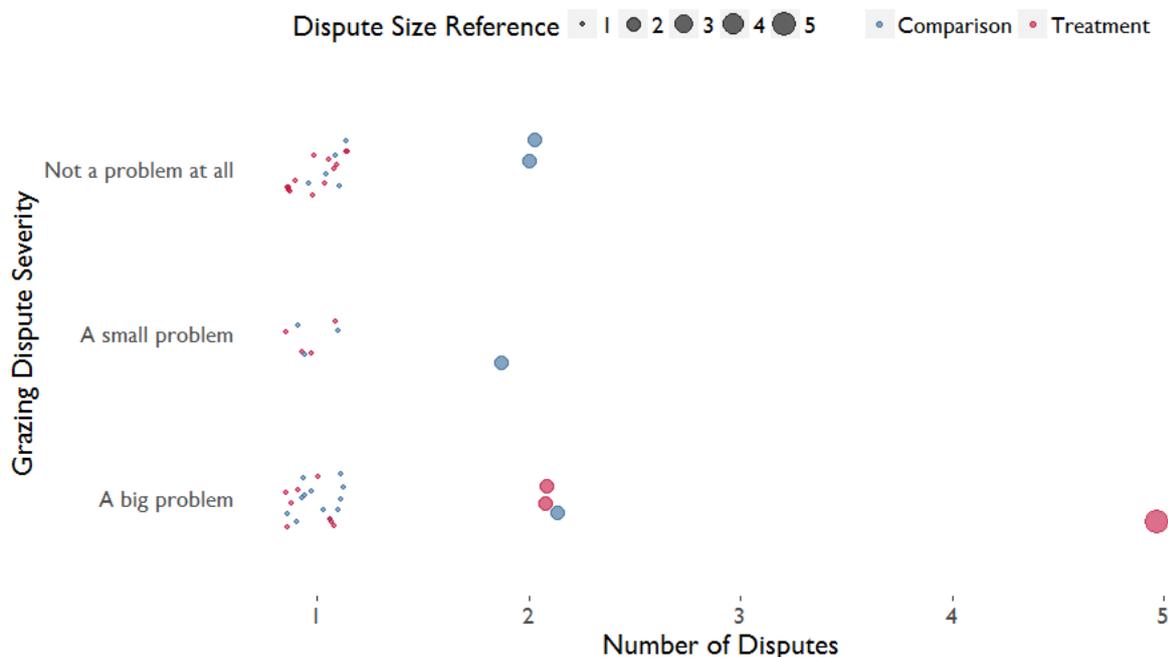


**FIGURE 7: PERCEIVED DISPUTE SEVERITY BY ASSIGNMENT GROUP**



In both the treatment and comparison groups, grazing, neighbor, and family disputes were viewed as more problematic, while investor disputes were least frequently seen as a problem. In the treatment group, 22.4 percent of respondents (n=83) viewed grazing disputes as a big problem, while 23.3 percent (n=97) of the comparison group said the same. For neighbor-based disputes, 29 percent of the treatment group said these were a small problem (n=108), while seven percent (n=26) said they were a big problem. There were similar findings in the comparison group. Thirty-four percent (n=143) and 10.6 percent (n=44) reported neighbor disputes as small and big problems, respectively. About 25 percent of both the treatment and comparison groups reported family disputes as a small problem; however, while only 7.5 percent (n=28) of the treatment group reported family disputes as a big problem, 12.7 percent (n=53) of the comparison group reported the same. With respect to grazing disputes, respondents who reported a greater number of disputes also tended to report that such types of disputes were more problematic (greater severity) (Figure 8). Notably, this is not the case for family and neighbor disputes, the other two disputes types for which respondents reported problems.

**FIGURE 8: GRAZING DISPUTE SEVERITY AMONG RESPONENTS WHO REPORTED EXPERIENCING DISPUTES**

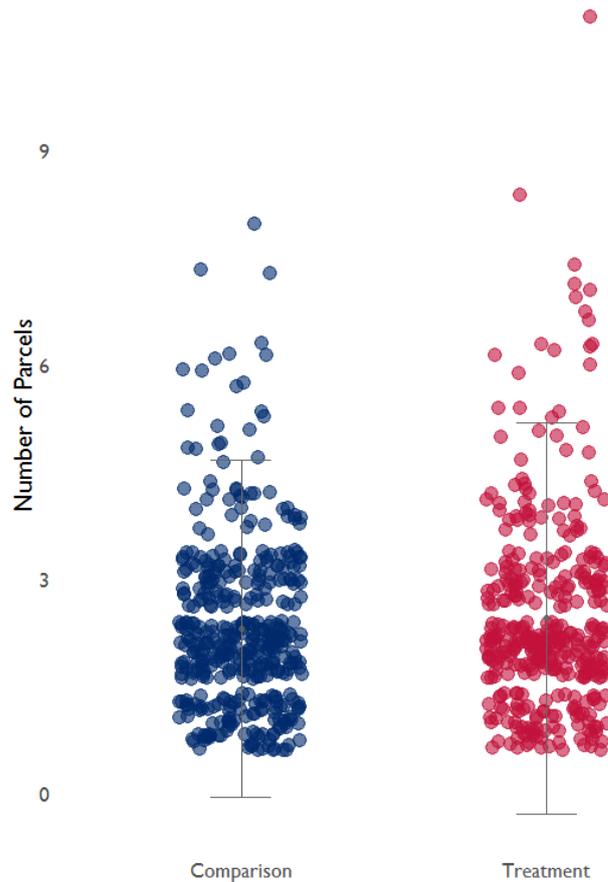


### 5.3 LANDHOLDINGS, INVESTMENT, AND ENVIRONMENT

Respondents were asked about the number of parcels owned or rented, as well as the parcel size. All size values were converted to hectares, but self-reported quantities, whether parcel size or number of trees are somewhat noisy estimates.<sup>15</sup> Households in both the treatment and comparison assignment groups reported owning or renting about the same number of parcels, with a median of two parcels for both assignment groups. As shown in Figure 9, there are a few outliers that push the mean number of parcels higher for the treatment group. Only 59 and 49 respondents reported more than three parcels in the treatment and comparison groups, respectively. In both the treatment and comparison groups, female headed households reported slightly fewer parcels owned: 2.0 parcels for female headed households to 2.6 parcels for male headed households in the treatment group, and 2.0 parcels for female headed households to 2.4 for male headed households in the comparison group. Similarly, average parcel size differed by gender of household head. In the treatment group, male headed households reported an average of 4.3 hectares to 3.9 hectares for female headed households. In the comparison group, male headed households reported an average of 3.7 hectares to 2.8 hectares for female headed households.

<sup>15</sup> There are many definitions for noise in a data set. In this instance, we refer mainly to outliers and misrepresentations of self-reported characteristics, whether deliberate or not, which result in a large range of responses that likely differ from the true value.

**FIGURE 9: NUMBER OF PARCELS BY ASSIGNMENT GROUP**



The evaluation team examined five main investment categories. As Table II shows, household investments in fencing their parcels were low. This is not surprising given the context of rural Iringa, where fencing is rarely used by smallholder farmers. Low levels of building, soil conservation, and terracing are expected given the capital intensiveness of these activities.

Less than 20 percent of respondents in both assignment groups reported tree-planting activity. The treatment group reported slightly higher average planting activity of non-fruit trees. Male and female headed households in the treatment group reported somewhat similar rates of non-fruit tree planting at 20.6 percent and 15.6 percent, respectively. In the comparison group, 14.7 percent of male headed households reported planting non-fruit trees, while only 5.7 percent of female headed households reported the same. It is important to note here that the self-reported responses on the number of non-fruit trees planted are highly noisy. Tree planting is a metric that the evaluation team will continue to investigate once follow-up data are collected during endline. As mentioned previously, a discussion of balance occurs later in this report.

**TABLE 11: SUMMARY STATISTICS OF LAND ENVIRONMENT, USE, AND INVESTMENT**

Variable	Treatment					Comparison				
	n	Mean	SD	Min	Max	n	Mean	SD	Min	Max
Parcel size (in hectares for all parcels owned)	371	4.22	8.08	0.1	74.66	417	3.42	5.32	0.1	49.37
Number of parcels owned or rented	371	2.45	1.37	1	11	417	2.31	1.18	1	8
Non-fruit trees planted (1=Y, 0=N)	371	0.19	0.40	0	1	417	0.12	0.33	0	1
Fruit trees planted (1=Y, 0=N)	371	0.16	0.37	0	1	417	0.11	0.32	0	1
Household invested in: (1=Y, 0=N):										
Buildings	371	0.23	0.42	0	1	417	0.17	0.38	0	1
Fencing	371	0.05	0.22	0	1	417	0.06	0.24	0	1
Soil conservation	371	0.26	0.44	0	1	417	0.21	0.41	0	1
Terracing	371	0.20	0.4	0	1	417	0.17	0.38	0	1
Wells	371	0.05	0.21	0	1	417	0.06	0.23	0	1

### 5.3.1 FOOD INSECURITY

The baseline survey examined food insecurity, and tried to capture respondents' experience of food insecurity in the previous 12 months through multiple questions designed to better understand anxieties and perceptions around this issue. As Table 12 shows, under one third of the sample in both assignment groups has faced food insecurity. Within the treatment group, 39 percent of female headed households (n = 35) and 23 percent of male headed households (n = 64) reported facing food insecurity over the previous 12 months. For the same time period in the comparison group, 33 percent of female headed households (n = 35) and 17 percent of male headed households (n = 54) reported food insecurity in the previous year. The number of days respondents faced food insecurity varied widely, as shown in Table 12. The 95 percent confidence intervals for the treatment and comparison groups are somewhat similar, however, at 41.9-69.4 and 44.6-77.0 days, respectively.

**TABLE 12: SUMMARY STATISTICS OF FOOD INSECURITY**

Variable	Treatment					Comparison				
	n	Mean	SD	Min	Max	n	Mean	SD	Min	Max
Have you been faced with a situation when you did not have enough food to feed the household in the past 12 months? (1=Y, 0=N)	371	0.27	0.44	0	1	417	0.21	0.41	0	1
For how long did you face this situation? (in days)	99	55.62	68.95	1	365	89	58.81	67.51	1	365

While the responses on general food insecurity are similar for treatment and comparison groups, there are some differences regarding the nature of this insecurity. When asked if lack of food in their house was caused by lack of resources for obtaining that food, 3.5 percent (n = 13) of treatment households and about 1.7 percent (n = 7) of comparison households said this was often (more than 10 times) the case. As to whether any household members went to sleep hungry, almost 11 percent of treatment respondents, but only five percent (n = 21) of comparison households, said this happened sometimes or often (n = 40). As shown in Figure 10, less than 50 percent (n = 180) of the treatment group said they have never been unable to eat their preferred foods due to lack of resources. This is the highest food insecure measure captured in the baseline data. In contrast, 58 percent (n = 243) of the comparison group said the same.

The differences between households on these food insecurity measures are important to consider because they may affect estimates of the LTA activity's outcomes. The treatment group in Phase II appears to be slightly more food insecure than the comparison group. Although this difference does not have a strong enough magnitude to create imbalance between the assignment groups, the evaluation team may investigate these differences further during qualitative data collection.

### 5.3.2 SOCIAL AND EMPOWERMENT OUTCOMES

The LTA activity provides tenure certification as well as education on Tanzania's land laws and land management. Given the LTA activity's theory of change, we would expect changes in beneficiary land status to affect self-perception, social capital within local networks, and standing within the village community. These factors may all affect whether and how people invest or make use of LTA's inputs, from the tangible (e.g., CCROs) to the intangible (e.g., widespread understanding of women's right to land). To gain some insight into how sampled households view themselves and their level of self-confidence, the evaluation team employed the Generalized Self-Efficacy Scale (GSES).<sup>16</sup> The GSES has been employed in 25 countries and multiple contexts to assess how respondents view their "capability to deal with certain life stressors." All respondent types (i.e., male heads of household, female heads of household, and wives) were asked the 10 self-efficacy questions from the GSES (see Figure 11).

The evaluation team will use follow-up surveys, as well as qualitative data collection at endline, to determine whether and how self-efficacy changes as land tenure is formalized and households go through the mapping and certification process. The evaluation team converted the self-efficacy responses to numeric values, with 4 equal to "Exactly true" (i.e. high self-efficacy), and 1 equal to "Not at all true," or a score suggesting lower self-efficacy. The treatment group had an average score of 3.05, and the comparison group an average score of 3.12 across all GSES items. These scores suggest generally high self-efficacy. The evaluation team further investigated how these numeric scores varied by respondent type across the assignment groups. Female household heads in the comparison group reported the lowest self-efficacy, with an average score of 2.78 (n = 105), while the same respondent type in the treatment group had an average score of 2.80 (n = 90). The highest score belonged to the male household heads in each assignment group, with treatment respondents averaging 3.21 (n = 281) and comparison respondents averaging 3.27 (n = 312).

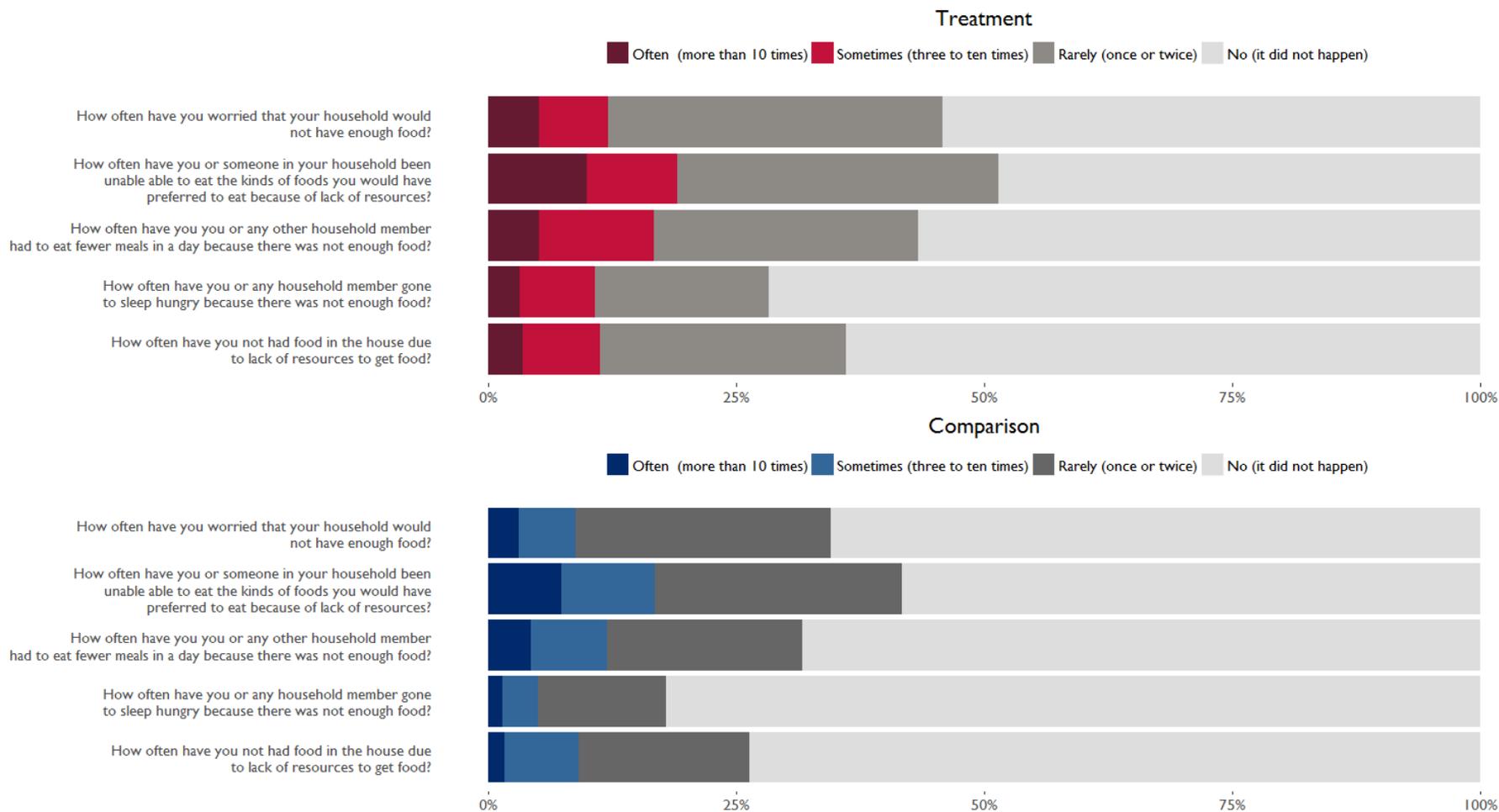
Baseline data collection also included questions related to decision-making power. The survey asked heads of household about decision making for each of the reported parcels. Because so few respondents report more than four parcels, this report presents the frequencies for decision making reported by treatment and comparison group household heads for the first four parcels (Tables 13 and 14).

Household heads in the sample reported making most of the decisions on parcel use. The only exception was three respondents who noted decision making on their eighth parcel. For the treatment group, decision making was split between "self" and "both self and spouse together" (n = 2), while the sole respondent in the comparison group reported joint decision making. The respondent in the treatment group who reported 11 parcels noted that, for parcels 9 and 10, joint decision making occurred as well.

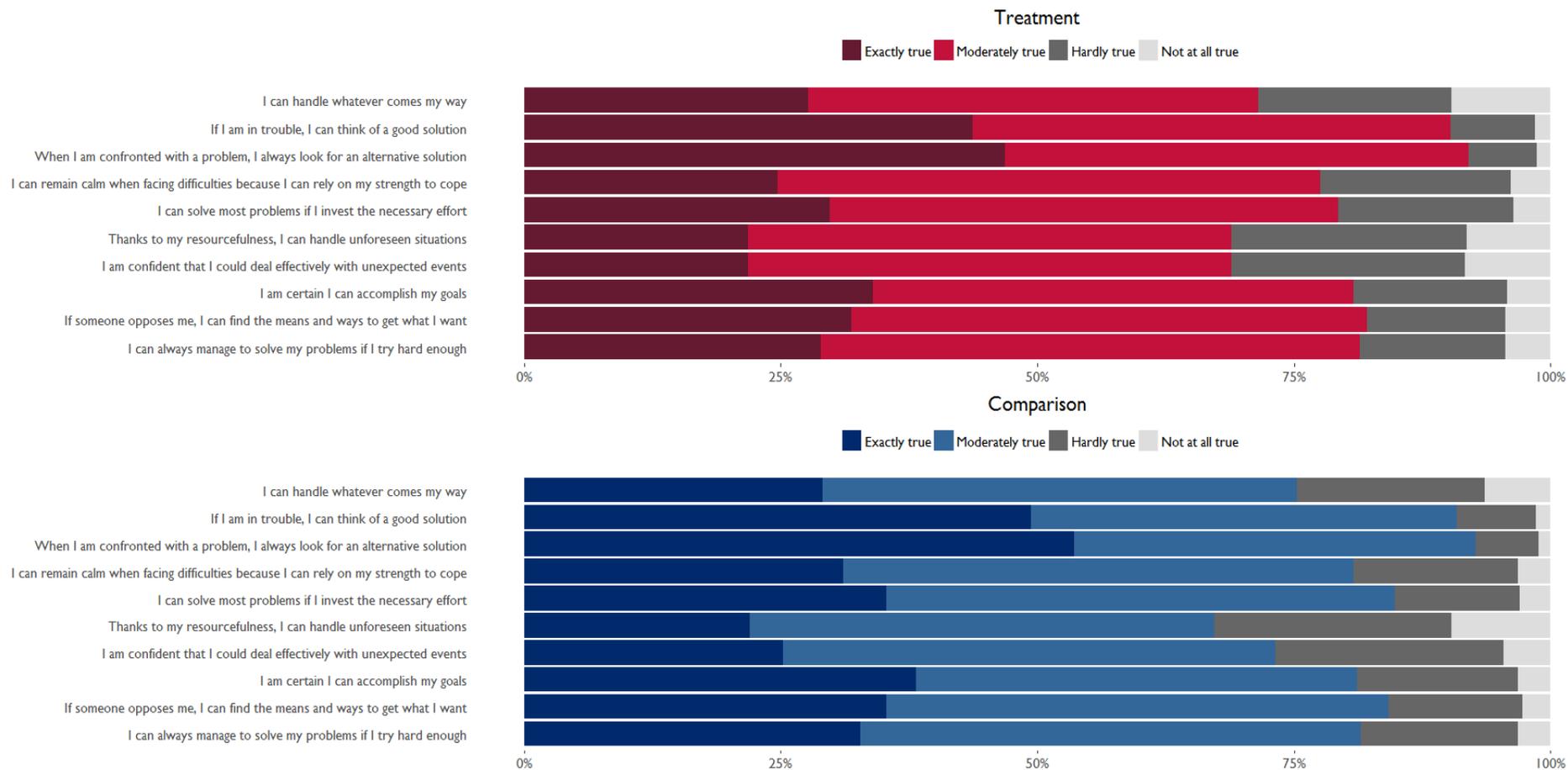
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<sup>16</sup> For more, see Aleksandra Luszczynska, Urte Scholz, and Ralf Schwarzer, "The General Self-Efficacy Scale: Multicultural Validation Studies," *The Journal of Psychology* 139, no. 5 (2005): 439-457.

**FIGURE 10: FOOD INSECURITY ACROSS TREATMENT AND COMPARISON GROUPS**



**FIGURE 11: SELF-EFFICACY BY TREATMENT GROUP**



**TABLE 13: HOUSEHOLD HEAD DECISION MAKING FOR PARCELS 1 AND 2**

Decision making on use of parcel 1					Decision making on use of parcel 2				
Response	Treatment		Comparison		Response	Treatment		Comparison	
	n	%	n	%		n	%	n	%
Self	277	74.66	299	71.7	Self	195	67.24	214	68.15
Spouse	9	2.43	5	1.2	Spouse	8	2.76	6	1.91
Both self and spouse together	78	21.02	104	24.94	Both self and spouse together	80	27.59	88	28.03
Other male household member	3	0.81	3	0.72	Other male household member	2	0.69	1	0.32
Other female household member	2	0.54	3	0.72	Other female household member	2	0.69	2	0.64
Other, specify	2	0.54	3	0.72	Other, specify	3	1.03	3	0.96

**TABLE 14: HOUSEHOLD HEAD DECISION MAKING FOR PARCELS 3 AND 4**

Decision making on use of parcel 3					Decision making on use of parcel 4				
Response	Treatment		Comparison		Response	Treatment		Comparison	
	n	%	n	%		n	%	n	%
Self	94	69.12	98	67.12	Self	38	64.41	31	63.27
Spouse	3	2.21	5	3.42	Spouse	1	1.69	0	0
Both self and spouse together	36	26.47	39	26.71	Both self and spouse together	19	32.2	16	32.65
Other male household member	1	0.74	0	0	Other male household member	1	1.69	1	2.04
Other female household member	1	0.74	2	1.37	Other female household member	0	0	0	0
Other, specify	1	0.74	2	1.37	Other, specify	0	0	1	2.04

### 5.3.2.1 WIVES' SURVEY AND DECISION MAKING

The evaluation team surveyed primary female spouses on many of the topics included in the household head survey, as well as on knowledge of and attendance at village meetings. More than half of the respondents in both the treatment and comparison group wives' samples were aware of women's groups in their village or nearby. The number of meetings respondents said they attended was similar across assignment groups, but slightly more respondents in the comparison group (65 percent, n = 186) said they were comfortable speaking in meetings or group settings. Table 15 shows select summary statistics of the wives' survey that directly capture LTA activity inputs, such as the establishment of women's groups and introducing beneficiaries to the details of Tanzania's land laws.

**TABLE 15: SUMMARY STATISTICS OF WIVES' MEETINGS AND LAND LAWS**

Variable	Treatment					Comparison				
	n	Mean	SD	Min	Max	n	Mean	SD	Min	Max
Are there women's groups in the village or surrounding area? (1=Y, 0=N)	244	0.66	0.48	0	1	288	0.62	0.48	0	1
Number of group meetings attended in the past six months	244	2.77	2.74	0	24	288	2.75	2.89	0	24
Do you feel comfortable speaking in meetings? (1=Y, 0=N)	244	0.58	0.49	0	1	288	0.65	0.48	0	1
Did you or anyone else in the household borrow money in the past year? (1=Y, 0=N)	244	0.19	0.39	0	1	288	0.24	0.43	0	1
Familiarity with land laws	244	0.29	0.45	0	1	288	0.25	0.43	0	1

Primary spouses in both assignment groups reported similar levels of familiarity with land laws. Of the 70 treatment and 71 comparison spouse respondents who said they were familiar with the land laws, only 10 percent (n = 7) and 18 percent (n = 13), respectively, also reported having some kind of documentation for their parcels. This suggests that there is at least some perceived basic understanding among spousal respondents regarding the land laws. However, as shown in Table 15, this group is still in the minority of the overall sample.

The wives' survey for the Phase II baseline also asked about decision making generally within the household. In contrast to head of household respondents, primary spouses reported joint decision making more frequently. As Table 16 shows, only about a quarter of spouses reported being the lead decision maker on income use. Slightly more respondents, about 28 percent (n = 68) and 31 percent (n = 88) in the treatment and comparison groups, respectively, noted being the lead decision maker on parcel use across all parcels. For each question related to decision making in the wives' survey, joint decision making was reported by both assignment groups as the most frequent approach, with the exception of wage-labor decisions. Only four respondents in both groups confirmed making wage-labor decisions. All treatment group respondents (100 percent) reported joint decision making related to wage-labor, while three (i.e., 75 percent) of the comparison respondents noted making those decisions themselves. Only one respondent reported joint decision making on the subject.

**TABLE 16: FREQUENCIES OF WIVES' DECISION MAKING**

Decision-making on general parcel use				
Response	Treatment		Comparison	
	n	%	n	%
Self	68	27.87	88	30.56
Spouse	47	19.26	40	13.89
Both self and spouse together	115	47.13	151	52.43
Other male household member	3	1.23	0	0
Other female household member	1	0.41	0	0
Other, specify	10	4.1	9	3.12

Decision-making on income use				
Response	Treatment		Comparison	
	n	%	n	%
Self	63	25.82	72	25.00
Spouse	29	11.89	36	12.5
Both self and spouse together	138	56.56	169	58.68
Other male household member	0	0	0	0
Other female household member	0	0	0	0
Other, specify	14	5.74	11	3.82

## 5.4 BALANCE AND POWER

In addition to providing the descriptive statistics presented in this document, the baseline data can also be used to test some of the statistical assumptions related to the evaluation methodology. This section investigates two such assumptions. First, balance tests are used to assess and confirm the comparability of the treatment and control groups. Second, the power calculations presented in the evaluation design proposal are revisited using updated parameters from the baseline data to assess statistical power, given the actual sample size and other sample parameters.

### 5.4.1 TESTING FOR BALANCE ACROSS TREATMENT AND COMPARISON GROUPS

Baseline data offer a snapshot of the pre-intervention context, and can be used to both test assumptions of the evaluation design, and ensure that randomization occurred as intended. An important consideration is to assess the balance between the treatment and control groups at baseline. If substantial differences in their characteristics exist, the control group may not be a valid representation of the counterfactual. While randomization in both assignment and survey respondent selection should theoretically increase the probability of balance between the treatment and comparison groups, it is important to test this assumption once data are collected to confirm the fidelity of the randomization procedure.

Researchers often use t-tests or regressions using treatment indicator variables to assess balance. However, no conceptual justification exists for using the statistical significance of such tests as a criterion for assessing balance.<sup>17</sup> As in Phase I, the evaluation team used a normalized differences approach to assess balance between assignment groups. This method calculates a statistic based on the difference between the treatment and control group means, divided by the square root of one-half the sum of the treatment and control group variances. An absolute value greater than one for this statistic raises concerns, while an absolute value of 0.25 or less indicates particularly strong

<sup>17</sup> Douglas Altman, "Comparability of Randomised Groups," *Journal of the Royal Statistical Society: Series D (The Statistician)* 34, 1 (1985): 125-136; K. Imai, G. King, and E.A. Stuart, "Misunderstandings among Experimentalists and Observationalists in Causal Inference," *Journal of the Royal Statistical Society Series A* 171, 2 (2008): 481-502; P. Austin, "Using the Standardized Difference to Compare the Prevalence of a Binary Variable between Two Groups in Observational Research," *Communications in Statistics: Simulation and Computation* 38, 6 (2009): 1228-1234.

balance.<sup>18</sup> Normalized differences also help assess whether any potential imbalance can be addressed in the analysis phase. Table 17 shows the results of the normalized differences for 23 variables across six thematic areas. The evaluation team chose these variables to reflect a broad range of the outcome categories and covariates that the IE analysis will use; these include household demographic characteristics, several measures of perceived tenure security, outcomes related to land disputes, women's empowerment, household wealth and economic outcomes, and several types of land related investment. In no cases are large differences between the treatment and control group sample means observed. As the last column illustrates, the normalized difference statistic falls below 0.25 for all of the variables, meeting the Imbens and Rubin standard for good balance. The evaluation team concludes, with a high level of confidence, that the treatment and control groups are well balanced, as would be expected given the randomized assignment between the two groups.

As mentioned earlier, the statistic on driving miles to Iringa Town should be taken as a general metric of distance to the economic center, rather than a respondent's actual access to markets, since road coverage estimation is inexact in much of rural Iringa. Given the higher standardized difference for this metric, 0.24, the evaluation team will determine if weighting or other specification parameters should be included during analysis.

#### 5.4.2 REVISITING POWER ASSUMPTIONS WITH PHASE II BASELINE DATA

The baseline data allow the evaluation team to revisit the power calculations presented in the evaluation design proposal to improve their accuracy and to reassess the expected statistical precision of the IE. In many IEs, power calculations are used to determine the minimum sample size required for the desired level of statistical power. In the case of the LTA IE, however, the sample size is constrained by the fact that LTA implementation is limited to 30 villages. In the case of this IE, the number of villages (i.e., clusters) is limited to 30 as this is the scope of the intervention. Thus, the focus of the power calculations is to determine the anticipated minimum detectable effect size for the different outcomes that will be possible rather than the required sample to achieve a given power.

To revisit the power calculation assumptions, the evaluation team used the underlying values of 80 percent power and a 0.05 statistical significance level. Power is the probability of detecting an effect where one actually exists (i.e., a true positive); a value of 80 percent or higher is generally considered sufficient. There are several key metrics for determining power for the village-level cluster RCT design used in this evaluation.

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<sup>18</sup> See Guido Imbens and Donald Rubin, *Causal Inference for Statistics, Social, and Biomedical Sciences: An Introduction* (Cambridge: Cambridge University Press, 2015).

**TABLE 17: NORMALIZED DIFFERENCE BALANCE TESTS FOR SELECTED VARIABLES**

Variable	Treatment			Control			Normalized diff. stat.
	N	Mean	SD	N	Mean	SD	
<i>Demographics</i>							
Female headed households, %	615	0.15	0.35	705	0.15	0.36	-0.01
Household head age	371	48.03	14.39	417	49.86	15.9	-0.12
Farmer cooperative membership	371	0.24	0.43	417	0.22	0.42	0.05
Annual household farm income (self-reported)	371	644406	4127285	417	555773	2195375	0.03
Education level for household heads and primary wives (0 = None, 1 = Primary, 2= Form, 3 = University)	615	0.86	0.46	705	0.85	0.48	0.03
Driving distance in miles to Iringa Town	570	30.98	15.23	657	27.59	12.8	0.24
Household size	371	4.48	2.49	417	4.37	2.16	0.05
<i>Perceived tenure security</i>							
Expropriation in next five yrs. is possible, %	371	0.07	0.25	417	0.04	0.2	0.11
Most/all in village worried about losing land, %	371	0.11	0.31	417	0.1	0.29	0.03
Has documentation for at least one parcel, %	615	0.11	0.31	705	0.14	0.34	-0.10
<i>Land disputes</i>							
Experienced land dispute in past year, %	371	0.08	0.26	417	0.06	0.23	0.07
Believe land disputes increased in past year, %	371	0.14	0.35	417	0.12	0.33	0.05
Believe land disputes will increase in next year, %	371	0.12	0.33	417	0.11	0.31	0.04
<i>Assets and economic outcomes</i>							
Size of total landholdings, acres	371	10.42	19.97	417	8.45	13.15	0.12
HH did not have enough to eat in past yr., %	371	0.27	0.44	417	0.21	0.41	0.13
<i>Land-related Investment: % of HHs making each land-related investment on at least one parcel</i>							
Wells/irrigation, %	371	0.05	0.21	417	0.06	0.23	-0.04
Erecting buildings, %	371	0.23	0.42	417	0.17	0.38	0.15
Erecting fencing, %	371	0.05	0.22	417	0.06	0.24	-0.05
Terracing, %	371	0.2	0.4	417	0.17	0.38	0.07
Soil conservation, %	371	0.26	0.44	417	0.21	0.41	0.12
<i>Women's empowerment (wives' survey)</i>							
Land use decisions made by male head of HH only, %	244	0.19	0.4	288	0.14	0.35	0.14
Attended village meetings in past yr., %	244	0.83	0.38	288	0.8	0.4	0.07
Comfortable speaking in village meetings, %	244	0.58	0.49	288	0.65	0.48	-0.14

An important parameter in the power calculations is the village intra-cluster correlation coefficient (ICC), which measures the extent to which observed variation in a variable is due to village-level differences, rather than individual differences. In the absence of similar datasets to draw on, power calculations must make assumptions about the ICCs and sample sizes. The design proposal for this IE thus presented statistical power for a range of assumptions about the ICCs. Now that the evaluation team has village-level observations about units (i.e., households) within each cluster and an actual sample size (n), the actual ICC for each outcome can be calculated and used, together with other updated sample parameters, to update the understanding of the evaluation's power to detect policy-relevant magnitudes of change for the outcomes of interest, given the sample parameters. The Minimum Detectable Effect Size (MDES) is another important parameter to inform overall study power. The MDES is an estimate of the smallest change in the outcome of interest that is detectable based on other sample parameters, such as the desired statistical significance (alpha) level, the ICC, the sample mean and variance, and the size of clusters. Table 18 shows the updated power calculations for the IE. The design proposal for this IE concluded that the analysis was likely to be sufficiently powered for most outcomes, but that outcomes for which the ICC was greater than 0.10 and/or for which impacts were particularly small (MDES less than 0.2), the IE would be statistically underpowered. Being underpowered means the IE would run a substantial risk of finding no impact even if LTA did, in fact, have some impact on these outcomes.

It is important to note that the values shown in Table 18 should be taken as general suggestions, rather than clear thresholds for whether an impact can be satisfactorily measured. As Andrew Gelman and others have noted, power is gameable and assumption laden calculations, but “can be useful in giving a sense of the size of effects that one could reasonably expect to demonstrate with a study of given size.”<sup>19</sup>

The values in Table 18 suggest that the conclusions of the RCT design hold, while keeping the general caveats of power calculations in mind. True effects for certain outcomes may less likely be detectable, particularly if the magnitude of the activity effect is small. Given widespread misunderstanding regarding statistical power, it is worth stating that there are other reasons that may contribute to findings of no change at endline. For example, even if an outcome is indicated to be sufficiently powered, based on the calculations in Table 18, changes on the ground may not take place within the span of the study, or may be difficult to attribute to the activity (LTA, in this case) due to the magnitude of actual change being smaller than the MDES.

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<sup>19</sup> See Andrew Gelman and Jennifer Hill, *Data Analysis Using Regression and Multilevel/Hierarchical Models* (Cambridge: Cambridge University Press, 2006), 442. Also, Daniel J. O’Keefe, “Brief Report: Post Hoc Power, Observed Power, A Priori Power, Retrospective Power, Prospective Power, Achieved Power: Sorting Out Appropriate Uses of Statistical Power Analyses.” *Communication Methods and Measures* 1, no. 4 (2007): 291-299. Esther Duflo, Rachel Glennerster, and Michael Kremer. “Using Randomization in Development Economics Research: A Toolkit,” *Handbook of Development Economics* 4 (2007): 3895-3962.

**TABLE 18: POWER CALCULATIONS FOR SELECTED OUTCOME VARIABLES, ASSUMING ALPHA = 0.05 AND POWER= 0.80**

Variable	N	Treatment Mean/SD	Comparison Mean/SD	ICC	MDES	Lower-Upper 95% CI
<i>Perceived tenure security</i>						
Expropriation in next five years is possible, %	788	0.07 (0.25)	0.04 (0.2)	0.01	0.11	0.03 0.18
Most/all in village worried about losing land, %	788	0.11 (0.31)	0.10 (0.29)	0.05	0.24	0.07 0.40
<i>Land disputes</i>						
Experienced land dispute in past year, %	788	0.08 (0.26)	0.06 (0.23)	0.00	0.07	0.02 0.11
Believe land disputes increased in past five years, %	788	0.14 (0.35)	0.12 (0.33)	0.06	0.25	0.07 0.43
Believe land disputes will increase in next five yrs., %	788	0.12 (0.33)	0.11 (0.31)	0.06	0.25	0.08 0.43
<i>Economic outcomes</i>						
HH did not have enough to eat in past yr., %	788	0.27 (0.44)	0.21 (0.41)	0.07	0.28	0.08 0.48
<i>Land-related Investment: % of HHs making each land related investment on at least one parcel</i>						
Wells/irrigation, (%)	788	0.05 (0.21)	0.06 (0.23)	0.00	0.03	0.01 0.10
Erecting buildings, (%)	788	0.23 (0.42)	0.17 (0.38)	0.04	0.21	0.06 0.36
Erecting fencing, (%)	788	0.05 (0.22)	0.06 (0.24)	0.05	0.24	0.07 0.41
Terracing, %	788	0.20 (0.40)	0.17 (0.38)	0.07	0.27	0.08 0.46
Soil conservation, %	788	0.26 (0.44)	0.21 (0.41)	0.12	0.36	0.11 0.61
<i>Women's empowerment (wives' survey)</i>						
Land use decisions made by male head of HH only, %	532	0.19 (0.4)	0.14 (0.35)	0.02	0.15	0.04 0.25
Attended village meetings in past yr., %	532	0.83 (0.38)	0.80 (0.40)	0.04	0.21	0.06 0.36
Comfortable speaking in village meetings, %	532	0.50 (0.49)	0.65 (0.48)	0.03	0.19	0.06 0.33

## 5.5 CONCLUSION AND DISCUSSION

This baseline report presented background information about the LTA activity and the IE design, summarized the Phase II baseline data collection process, investigated some of the methodological assumptions in the evaluation design proposal, and presented descriptive statistics from the Phase II baseline data.

In general, the evaluation team concludes that the Phase II dataset is of sufficient quality for estimation of activity impacts. We did not encounter any major challenges with the data once the final dataset was obtained. Below are a few concluding observations regarding the baseline data:

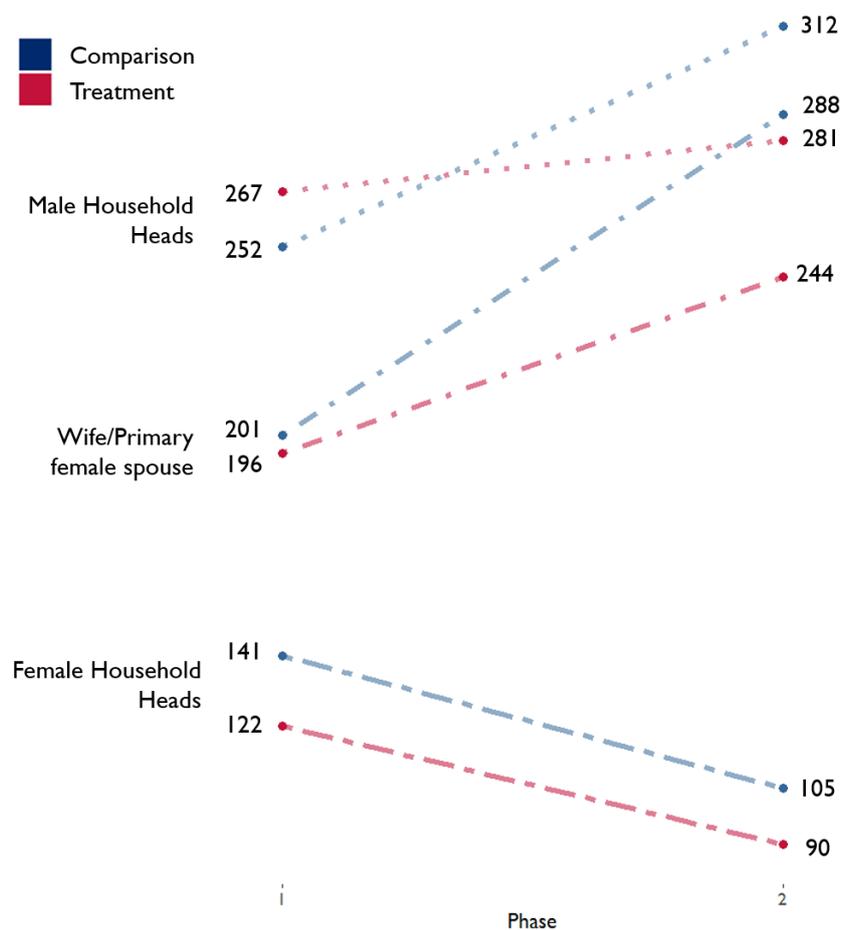
- **Household characteristics:** There is a large primary spouse presence in the dataset, especially compared to Phase I. As shown in Figure 3, around 40 percent of both assignment groups is comprised of primary spouses. This is due to lessons learned from Phase I and the timing of data collection (Phase I data collection took place during the height of the rainy season, while Phase II occurred during the dry season).
- **Tenure security and land disputes:** Baseline data show that awareness of CCROs was somewhat high in both assignment groups (around 60 percent of both treatment and comparison groups had heard of them). However, only few respondents actually had some kind of land documentation. Similarly, less than 10 percent of either group reported familiarity with the land laws, which suggests that the educational portion of the LTA activity may be able to make strong gains and measurable impact in this area. Almost half the respondents in both assignment groups reported a risk of land grabbing, should they leave one or more of their parcels fallow.
- **Landholdings, use, and investment:** Most households reported owning more than one parcel, although there was significant variability in the self-reported parcel size and female households in both the treatment and comparison groups reported fewer parcels on average. Investments in parcels were low, but soil conservation and building investments were the most common. Almost 20 percent of male and female heads of household in the treatment group reported planting non-fruit trees in the past year.
- **Social and empowerment outcomes:** Around 27 percent of the treatment group and 21 percent of the comparison group reported facing food insecurity. Household heads generally reported that they were responsible for a majority of parcel use decisions, while primary spouses reported that parcel use decisions were jointly made, on average. This is perhaps due to various cognitive or social-emotional biases, and will need to be examined more thoroughly at endline and through qualitative work.
- **Balance and statistical power:** No major differences were observed between the treatment and comparison groups on key variables. The data suggest that the evaluation is sufficiently powered to detect policy-relevant effect sizes for the main outcomes of interest, but there are limits to this given the time it takes for some of the impact of the LTA activity to occur.

As mentioned earlier, the difference in data collection timing is important when attempting to compare the two phases of baseline data collection. Annex D contains a memo that was shared with USAID noting the challenges that this may create for future analysis.

With this difference in mind, it is also desirable to examine some of the more notable differences between Phase I and Phase II. As shown in Annex E, the sample size was slightly higher for Phase II. Phase II interviewed 1,320 respondents across 807 households, while Phase I sampled a total of 1,179 respondents in 763 households. The difference is partly a result of preferential weather and travel conditions for the survey team during Phase II. However, the total number of household heads was similar across both phases, with 782 sampled in Phase I and 788 in Phase II.

The graph in Figure 12 shows the change in sample size between treatment and comparison groups between each phase of the evaluation. The number of female household heads in the sample fell between Phases 1 and 2, and the number of wives interviewed increased between phases. This may be a function of the seasonal difference in timing across the two survey rounds, as more households had multiple respondents (i.e., male head and female spouse) available during the dry season when farm activities are less time intensive.

**FIGURE 12: PHASE I AND PHASE 2 SAMPLE BY RESPONDENT AND ASSIGNMENT**



### 5.5.1 NEXT STEPS

Next steps for the LTA activity IE consist of three main activities: endline planning and data collection; review and adjustments to analytical approach; and final analyses, reporting, and dissemination.

In the next phase of the evaluation, the MSI/NORC team will develop the endline survey instrument based on the baseline and midline instruments used in Phase I and Phase II. The goal of the endline analyses will be to estimate the impact of the LTA activity on the outcomes of interest. The endline data collection phase aims to re-survey all Phase I and II respondents, with minimal attrition.

The evaluation team will also review the data from the first two phases and assess where qualitative data collection can effectively help to fill gaps in understanding and better interpret the quantitative estimates of activity impacts. Focus group discussions and key informant interviews with stakeholders from DAI, DLO, and village leadership may help inform reasons for impacts (or lack thereof), and how and why impacts may have varied for different types of beneficiaries. Qualitative data will help the evaluation team better understand the mechanisms through which activity impacts

may or may not have occurred, as well as provide a richer understanding of how tenure certification has affected perceptions among farmers in Iringa.

The evaluation team will continue exploring Phase I and II data to determine if any additional adjustments to the analytical approach are warranted. This may include applying a weighting scheme or other methods to account for variance across villages in the number of surveyed respondents and seasonal factors between Phase I and Phase II.

The endline analysis will directly address and attempt to provide answers to each of the evaluation questions. While the baseline data can provide a point-in-time overview of the sample, endline analysis will bring together all of the data collection phases to actually address each evaluation question in detail.

Finally, the evaluation team anticipates sharing the findings from the midline and endline reports to improve the evidence base and understanding of land tenure programming impacts within the development community. As part of this effort, the evaluation team will present the midline results at the World Bank's 2018 Land and Poverty conference in Washington D.C. To enhance the Agency's investment in IEs, the evaluation team will also work with USAID to identify additional opportunities to disseminate findings from this report and the prospective endline findings and conclusions.

## **6 PHASE I MIDLINE**

This section of the report presents initial results from the Phase I midline. The midline survey used an amended baseline survey instrument to re-survey respondents from the Phase I sample. The sampling approach within villages was purposive, that is, enumerators used the geo-stamps and phone numbers of Phase I baseline respondents to find and interview respondents.

The midline portion of this report provides a brief overview of the current status of implementation, as well as more details about the current implementation process. Select summary statistics are presented for the Phase I baseline and midline to show raw comparisons between the survey rounds. Preliminary inferential analysis is then presented, followed by a general discussion of the data and results.

As with any midline, the results in this section, whether descriptive or inferential, should be seen as preliminary. In some cases, a positive or negative change may simply be a result of temporary factors not accounted for in the data and, thus, may not be sustained through endline and beyond. For this evaluation, it is important to note that, due to a shift in the implementer's timeline, the midline for Phase I village took place five months earlier than planned, and approximately six months after the start of implementation in those villages.<sup>20</sup> As many of the outcomes of interest to this evaluation rest on substantive behavioral change within households, villages, and the local DLO—which will likely take time to accrue—they may not be evident at this early stage of the evaluation.

The evaluation team reviewed implementation data to gain a better sense of the sequence and scale of implementation. LTA activity data and documentation provide some insight into responses that may reflect lagged effects or may differ from the evaluation survey data. Analysis at endline will help explain divergence between evaluation and implementation data, and qualitative interviews will provide plausible explanations for potential discrepancies between IP reporting and the evaluation team's findings. For example, although only half of the treatment sample reported possessing some form of land documentation, the most recent quarterly data from DAI show that an average of 93

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<sup>20</sup> The evaluation design planned for a phase-in approach that included data collection at 12-month intervals, and the Phase I baseline took place in March and April of 2017, during the rainy season.

percent of the 10,535 registered CCROs had been collected.<sup>21</sup> The evaluation team will continue to coordinate with LTA activity staff to better understand implementation sequencing and processes.

## 6.1 IMPLEMENTATION BACKGROUND

The LTA activity performed demarcation and adjudication, objection and correction, printing and registration, and CCRO registration across nine villages in the treatment group between May and November of 2017. This can generally be considered the Phase I implementation period. An additional three villages received demarcation and adjudication and objection and correction services through December 2017. Figure 13 presents the stages of LTA activity implementation. As LTA activity documentation notes, each stage can require multiple teams working simultaneously and in coordination with local officials in villages and at the DLO.

**FIGURE 13: ILLUSTRATIVE LTA ACTIVITY VILLAGE IMPLEMENTATION PROCESS**



On average, 85 percent of parcels in nine Phase I villages where registration took place received CCROs. Hence, a total of 10,535 CCROs were issued through November. Of those CCROs issued, 92% (n = 9,257) have been claimed, according to LTA M&E data shared with the evaluation team. LTA has 2017 data for seven villages. These show that, of the more than 9,000 CCROs claimed, 3,781 were issued to unique claimants (i.e., individuals claiming CCROs for their parcel(s), since one person may claim multiple CCROs). There was an average of 82 days between the start of demarcation and adjudication and the issuance of CCROs in the nine villages where these activities took place.<sup>22</sup> Moreover, the time taken between adjudication and CCRO issuance varied. For example, the process took 35 days in Mwambao village, with its 663 parcels, and 115 days in Mgama village for 2,301 parcels.

LTA staff not only provided the evaluation team with data on registration and CCROs, they also helped update or facilitate the issuance of Village Land Use Plans (VLUPs). In many cases, VLUPs were either out of date or nonexistent, despite reports stating otherwise. The three villages that did not have any Phase I activities as of the end of calendar year 2017 are all awaiting VLUPs. VLUPs are required to move forward with demarcation and other processes, as they lay out how a village will manage and use the land within its boundaries.

### 6.1.1 CHANGES TO IMPLEMENTATION TIMING AND IMPLICATIONS FOR THE IE

As noted previously, the timing for Phase I midline data collection (concurrent with Phase II baseline data collection) changed from what was originally planned in the design proposal for this evaluation. Annex D provides the formal memo the evaluation team drafted to USAID outlining the anticipated challenges associated with the change in the LTA implementation timeline and subsequent change in the timing of Phase II baseline and Phase I midline data collection. As the team noted, the change in the implementation timeline and earlier collection of Phase I midline data would likely result in smaller than expected changes in outcomes at the Phase I midline.

In reviewing the Phase I midline findings, then, it should be kept in mind that midline data collection took place six months after baseline, rather than at the planned 12-month interval, and during the

<sup>21</sup> Based on disaggregated data provided to the evaluation team, but reported in “Monthly Report No. 24” 1-30 November 2017 Feed the Future Land Tenure Assistance, Annex 3.

<sup>22</sup> The nine villages are Malagosi, Mgama, Mfukulembe, Udumka, Ilandutwa, Muwimbi, Mwambao, Nyamihuu, and Ngano.

dry, rather than, rainy season. Seasonal differences can affect the outcomes of interest. For instance, seasonal changes in migration patterns and resource use may heighten or lessen dispute prevalence.<sup>23</sup> During final analysis, the evaluation team may be able to control for seasonal variation using external sources such as rainfall data.

In addition, the change in the IE data collection timeline has implications for midline questions regarding investments and parcels.<sup>24</sup> Although the focus of the midline findings is on changes in outcomes for treatment households, summary statistics for comparison households are presented to show general trends and provide context.

## 6.2 MIDLINE RESULTS

Phase I midline data covered 610 households and 907 respondents (Figure 14). This sample includes roughly 81 percent of the Phase I baseline sample (n = 755 households and 1,179 respondents). The evaluation team was unable to visit one Phase I village, Makuka, due to safety concerns tied to ongoing and heated land disputes in the village.<sup>25</sup> After two meetings with the Makuka village chairman, the evaluation team and field coordinators decided it would not be safe to proceed with data collection.

The overall household attrition rate from baseline to midline was 17 percent (excluding Makuka village). Wives had the highest rate of attrition, at 28 percent. In about 60 percent of attrition cases, respondents from the Phase I baseline could not be re-interviewed, due to the fact they were travelling or absent from the village during the survey team's visits. Another 20 percent of attrition cases resulted from the evaluation team's inability to locate respondents, with no explanation given by neighbors or other members of the household (i.e., attrition was not due to relocation or travel). Finally, household members reported that five percent of the baseline sample had passed away. Other causes of attrition included illness and refusal to be re-interviewed.

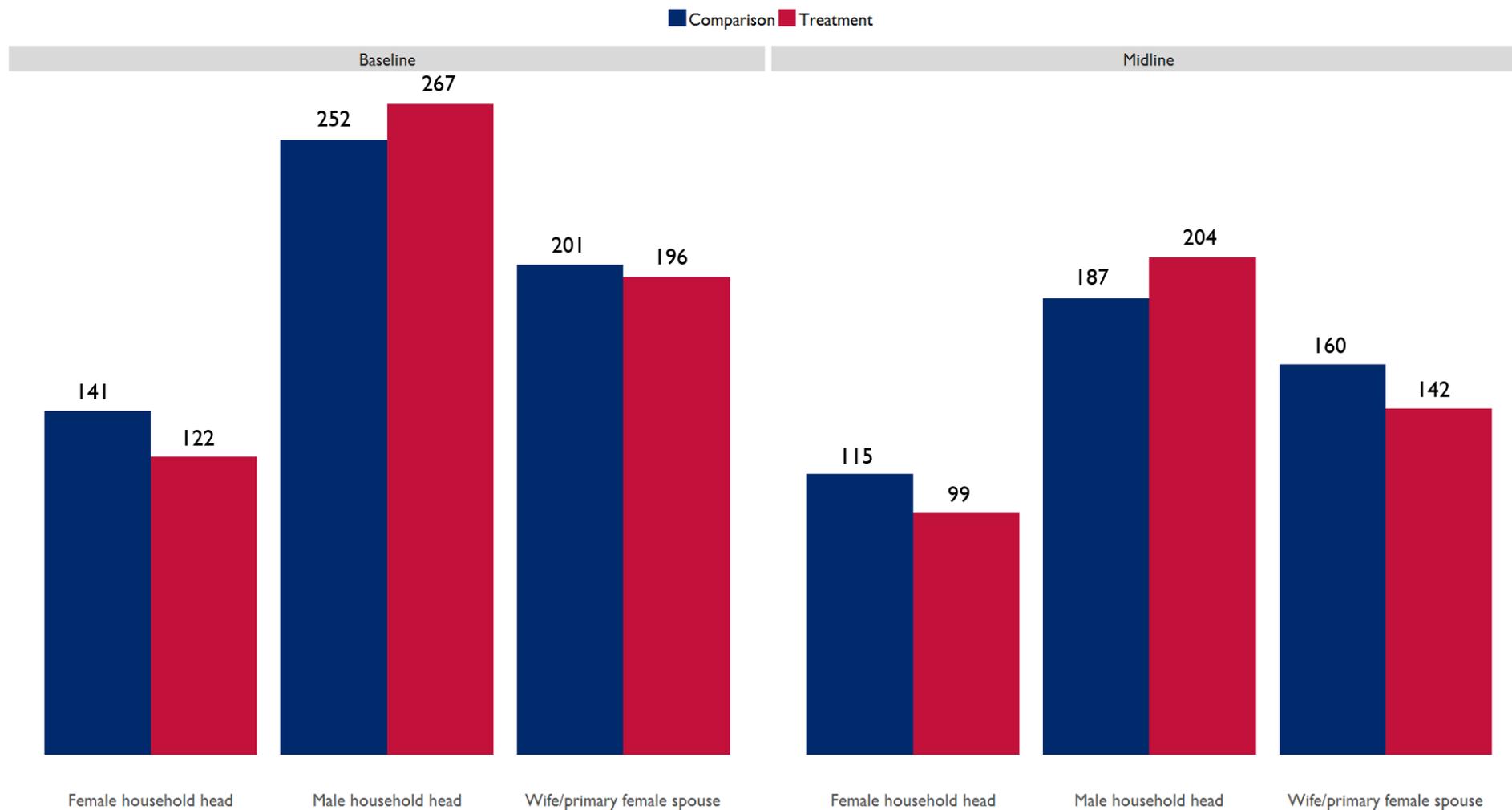
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<sup>23</sup> Milline J. Mbonile, "Migration and Intensification of Water Conflicts in the Pangani Basin, Tanzania," *Habitat International* 29, no. 1 (2005): 41-67.

<sup>24</sup> Margareta Wandel and Gerd Holmboe-Ottesen, "Food Availability and Nutrition in a Seasonal Perspective: A Study from the Rukwa Region in Tanzania," *Human Ecology* 20, no. 1 (1992): 89-107.

<sup>25</sup> Twenty-three households in Makuka, comprising seven female household heads, 16 male household heads, and 10 wives, were not included in the midline sample. LTA activity staff has reported that the situation in Makuka has calmed down, hence, it is possible these respondents will be included in the endline sample.

**FIGURE 14: BASELINE AND MIDLINE SAMPLE BY ASSIGNMENT GROUP**



## 6.2.1 SUMMARY STATISTICS BETWEEN BASELINE AND MIDLINE

### 6.2.1.1 LAND RIGHTS AND TENURE SECURITY

Phase I baseline and midline samples show changes in tenure security and land rights measures within the treatment group relative to the comparison group (Table 19). While only 16 percent (n = 100) of treatment group respondents surveyed at baseline said they possessed land-related documentation, at midline the rate was 43 percent (n=205), a statistically significant change ( $p < 0.001$ ). In contrast, 11 percent of comparison group respondents had land documentation at baseline, but only 12 percent at midline (this change was not statistically significant).

In the treatment group, the WTP for CCROs fell from baseline to midline by an average of 18,881 shillings. While an average decline of 57 percent, the change was not statistically significant. However, the proportion of treatment group respondents familiar with CCROs increased from 52 percent to 77 percent. According to LTA documentation, the average unit cost per CCRO is \$8.97 USD, or roughly 20,000 shillings.<sup>26</sup> A more modest decrease in WTP was recorded for the comparison group (5,187 shillings on average). Also for that group, familiarity with CCROs increased by an average of three percentage points across the two survey rounds. It is possible that changes to WTP at midline for both groups reflect respondents' increased familiarity with the document and its typical cost to obtain.

In order to promote understanding of land laws and documentation, the LTA activity ran a pre-recorded radio show on five local stations in Iringa in June 2017, and a live radio show in September 2017. Activity staff also recorded three one-minute radio spots that were played 15 times over the course of six days ahead of the live radio show.<sup>27</sup> These activities were aired evenly in both treatment and comparison areas. It is worth examining whether CCRO awareness and valuation changed as result of the total LTA activities implemented in the treatment villages between baseline and midline.

Respondents in both assignment groups were generally more positive about future land disputes and potential expropriation risks at midline. When asked about land disputes in the coming year, 11 percent more treatment group respondents from baseline to midline (151 to 168) expected an improvement in land dispute problems. The opposite occurred in the comparison group, where nine percent fewer respondents (from 149 to 135) expected improvements over the next 12 months. Both assignment groups reported less community concern about land grabbing at midline, which may suggest less anxiety regarding this issue in Iringa. Additional data collected at endline will provide more insight into this and the other tenure security metrics in Tables 19 and 20 that saw little or no change between survey rounds.

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<sup>26</sup> See Annex 3, Table 3.1.1 in the LTA Activity Annual Report: Year 2, 2-47.

<sup>27</sup> For more information on these activities see the LTA FY2017 Annual Report, 7.

**TABLE 19: TREATMENT GROUP TENURE SECURITY AND LAND RIGHTS SUMMARY STATISTICS AT BASELINE AND MIDLINE**

Variable	Treatment Group										Mean Diff.
	Baseline					Midline					
	n	Mean	SD	Min	Max	n	Mean	SD	Min	Max	
Do you have familiarity with land laws (I=Y, 0=N)	585	0.04	0.19	0	1	445	0.05	0.22	0	1	0.01
Household possesses land-related documentation (I=Y, 0=N)	585	0.16	0.37	0	1	445	0.43	0.5	0	1	0.27***
Heard of CCROs (I=Y, 0=N)	585	0.52	0.5	0	1	445	0.77	0.42	0	1	0.25***
Willingness to pay for a CCRO (in TZS)	307	33,054	51,443	0	500,000.00	344	14,173	24,621	0	200,000.00	18,881***
In general, how many people in your community are worried that someone might try to take their land against their will? (I=Y, 0=N)	389	0.16	0.37	0	1	303	0.09	0.29	0	1	-0.07**
In the next 12 months, do you expect problems with land disputes will improve, stay the same, or get worse? (I = improve, 0 = stay the same, -1 = get worse)	389	0.23	0.71	-1	1	303	0.49	0.61	-1	1	0.26***
In the next five years, do you think it's possible that someone could try to take one of your parcels from you without your permission?	389	0.09	0.29	0	1	303	0.06	0.23	0	1	-0.03*
Is there a risk that someone will take over one of your plots if you leave it fallow? (I=Y, 0=N)	389	0.44	0.5	0	1	303	0.44	0.5	0	1	0

Statistical significance is denoted by the following: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**TABLE 20: COMPARISON GROUP TENURE SECURITY AND LAND RIGHTS SUMMARY STATISTICS AT BASELINE AND MIDLINE**

Variable	Comparison Group										Mean Diff.
	Baseline					Midline					
	n	Mean	SD	Min	Max	n	Mean	SD	Min	Max	
Do you have familiarity with land laws (I=Y, 0=N)	594	0.03	0.18	0	1	462	0.03	0.17	0	1	0.00
Household possesses land-related documentation (I=Y, 0=N)	387	0.11	0.32	0	1	292	0.12	0.33	0	1	0.01
Heard of CCROs (I=Y, 0=N)	594	0.56	0.5	0	1	462	0.59	0.49	0	1	0.03
Willingness to pay for a CCRO (in TZS)	331	23,094	42,023	0	500,000	273	17,907	23,177	0	200,000	-5,187*
In general, how many people in your community are worried that someone might try to take their land against their will? (I=Y, 0=N)	393	0.15	0.36	0	1	302	0.09	0.29	0	1	-0.06**
In the next 12 months, do you expect problems with land disputes will improve, stay the same, or get worse? (I = improve, 0 = stay the same, -1 = get worse)	393	0.22	0.7	-1	1	302	0.32	0.68	-1	1	0.10*
In the next five years, do you think it's possible that someone could try to take one of your parcels from you without your permission?	393	0.1	0.31	0	1	302	0.1	0.3	0	1	0.00
Is there a risk that someone will take over one of your plots if you leave it fallow? (I=Y, 0=N)	393	0.46	0.5	0	1	302	0.5	0.5	0	1	0.04

Statistical significance is denoted by the following: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

### 6.2.1.2 LAND DISPUTES

The LTA activity facilitates dispute resolution processes and informs farmers about their rights under the law. Evidence has shown that assisted dispute resolution can, paradoxically, result in an initial increase in disputes.<sup>28</sup> One reason is that an improved dispute resolution process or greater discussion of disputes may cause respondents to increase their reporting. Generally, land disputes are fairly uncommon among both assignment groups. Although there was no change in the proportion of treatment group respondents who experienced a dispute in the past year, there was a four percent decline (from 10 to 6 percent) in the proportion of comparison group respondents who experienced a dispute (there is substantial overlap in the reporting period for baseline and midline data). From Phase I baseline to midline, there was also no change in the mean number of disputes reported by the treatment group, while the average duration of disputes in the comparison group rose from 0.5 to 1.9 months ( $p < 0.10$ ) (Table 21). The number of people in the treatment and comparison groups reporting disputes declined between data collection rounds. Additional data from the endline investigation will explore whether this is a general trend in Iringa; for example, both assignment groups reported an increase in the average duration of disputes, even though fewer people from both groups reported disputes.

### 6.2.2 LANDHOLDINGS, INVESTMENT, AND ENVIRONMENT

Given the short period between baseline and midline, major changes would not be expected in landholdings and investment behavior beyond what may be seasonally driven. Both assignment groups reported an increase in the number of parcels owned and mean parcel size between survey rounds (Table 22 and Figure 15).

The approach to asking about investments changed slightly between survey rounds. At baseline, respondents were asked about specific investments based on their response to previous survey items. At midline, the evaluation team posed the issue to all heads of household as a simple yes/no question. As shown in Tables 22 and 23, the proportion of respondents in both assignment groups who reported investment activity was similar across survey rounds. Both groups experienced a similar increase in investment in buildings. This may reflect the change in survey approach across the two rounds. The uptick in building investment may also reflect the survey's seasonal variation in timing. It is easier to construct buildings during the dry season, and recall may be more accurate for activities that were done closer to the survey date. This type of recall bias and difference in seasonal timing of the baseline and midline may have led to the drop in fruit and non-fruit tree planting activity reported by both assignment groups at midline. The dry season (midline timing) is not as conducive for tree planting as the rainy season (baseline timing).<sup>29</sup>

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<sup>28</sup> See Christopher Blattman, Alexandra Hartman, and Robert Blair, "How to Promote Order and Property Rights Under Weak Rule of Law? An Experiment in Changing Dispute Resolution Behavior through Community Education," *American Political Science Review* 108, 4 (2014): 1-21.

<sup>29</sup> In both survey rounds, respondents were asked about the preceding 12 months.

**TABLE 21: SUMMARY STATISTICS OF TREATMENT AND COMPARISON GROUP DISPUTES BY BASELINE AND MIDLINE**

Variable	Treatment Group										Mean Diff
	Baseline					Midline					
	n	Mean	SD	Min	Max	n	Mean	SD	Min	Max	
Experienced a dispute in the past year (1=Yes, 0 = No)	389	0.08	0.27	0	1	303	0.08	0.27	0	1	0
How long did the dispute last? (in months)	389	0.61	2.44	0	12	303	1.53	11.32	0	148	0.92
Number of disputes in the past 12 months	30	1.03	0.18	1	2	23	1.09	0.29	1	2	0.06

Statistical significance is denoted by the following: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Variable	Comparison Group										Mean Diff.
	Baseline					Midline					
	n	Mean	SD	Min	Max	n	Mean	SD	Min	Max	
Experienced a dispute in the past year (1=Yes, 0 = No)	393	0.1	0.3	0	1	302	0.06	0.23	0	1	-0.04*
How long did the dispute last? (in months)	393	0.54	2.07	0	12	302	1.95	16.52	0	204	1.41*
Number of disputes in the past 12 months	38	1.13	0.34	1	2	17	1.06	0.24	1	2	-0.07

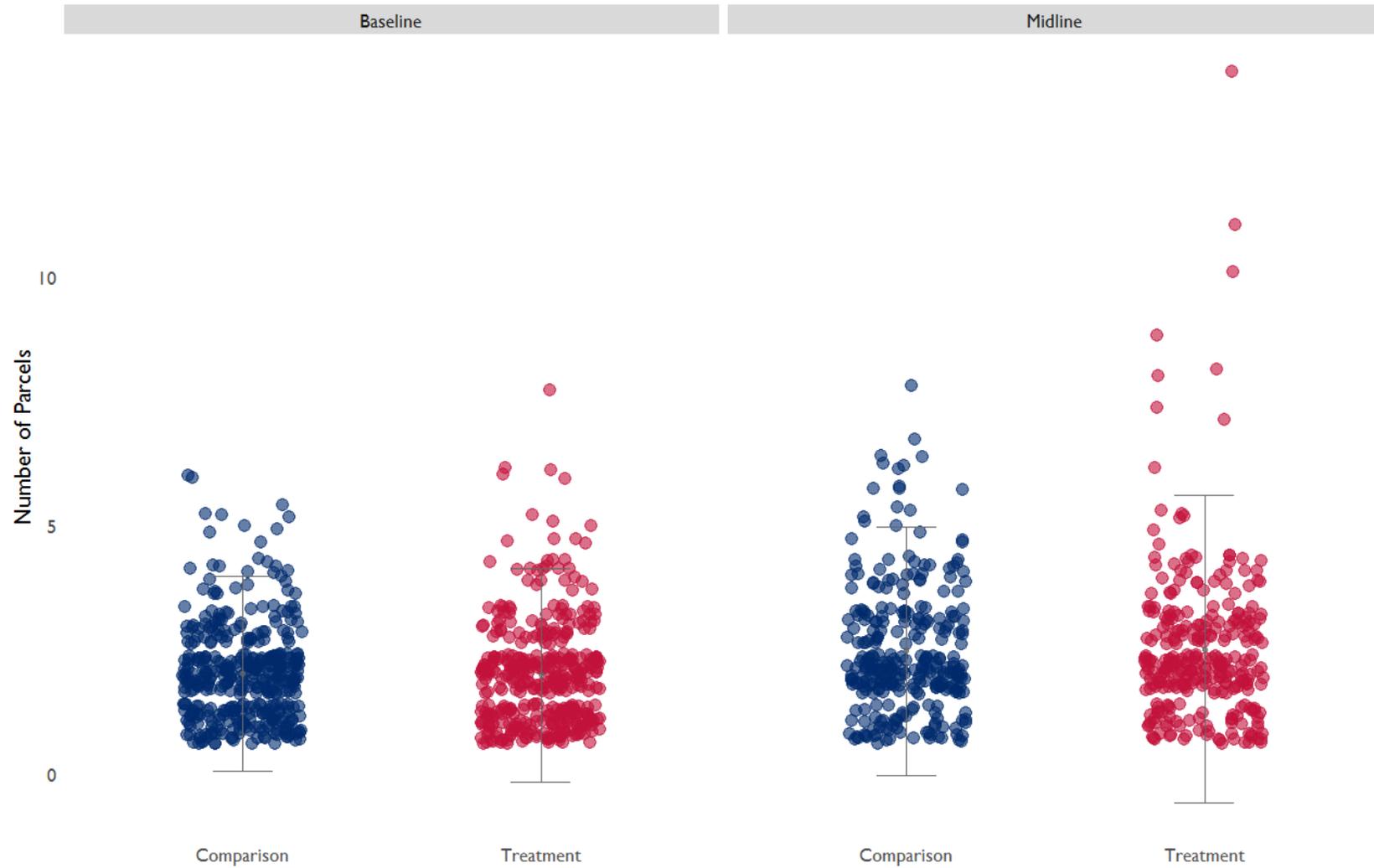
Statistical significance is denoted by the following: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**TABLE 22: SUMMARY STATISTICS OF TREATMENT GROUP LANDHOLDING BY SURVEY ROUND**

Variable	Treatment Group										Mean Diff.
	Baseline					Midline					
	n	Mean	SD	Min	Max	n	Mean	SD	Min	Max	
Parcel size (in hectares for all parcels owned)	389	2.57	5.37	0	86.6	303	3.84	6.72	0	55.4	1.27***
Number of parcels owned or rented	389	1.98	1.07	1	8	303	2.5	1.55	1	14	0.52***
Fruit trees planted (1=Y, 0=N)	389	0.44	0.5	0	1	303	0.39	0.49	0	1	-0.05
Non-fruit trees planted (1=Y, 0=N)	389	0.24	0.43	0	1	303	0.16	0.37	0	1	-0.08**
Household invested in: (1=Y, 0=N):											
Buildings	389	0.21	0.41	0	1	303	0.47	0.5	0	1	0.26***
Fencing	389	0.05	0.21	0	1	303	0.03	0.18	0	1	-0.02
Soil conservation	389	0.3	0.46	0	1	303	0.34	0.48	0	1	0.04
Terracing	389	0.21	0.41	0	1	303	0.25	0.43	0	1	0.04
Wells	389	0.04	0.2	0	1	303	0.05	0.21	0	1	0.01

Statistical significance is denoted by the following: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**FIGURE 15: NUMBER OF PARCELS BY ASSIGNMENT GROUP AND SURVEY ROUND**



**TABLE 23: SUMMARY STATISTICS OF COMPARISON GROUP LANDHOLDING BY SURVEY ROUND**

Variable	Comparison Group										Mean Diff.
	Baseline					Midline					
	n	Mean	SD	Min	Max	n	Mean	SD	Min	Max	
Parcel size (in hectares for all parcels owned)	393	2.32	3.3	0.1	36.83	302	2.8	3.54	0.1	24.28	0.48*
Number of parcels owned or rented	393	2.02	0.98	1	6	302	2.47	1.25	1	8	0.45***
Fruit trees planted (1=Y, 0=N)	393	0.51	0.5	0	1	302	0.43	0.5	0	1	-0.08**
Non-fruit trees planted (1=Y, 0=N)	393	0.25	0.43	0	1	302	0.12	0.32	0	1	-0.13***
Household invested in: (1=Y, 0=N):											
Buildings	393	0.18	0.39	0	1	302	0.47	0.5	0	1	0.29***
Fencing	393	0.05	0.22	0	1	302	0.07	0.25	0	1	0.02*
Soil conservation	393	0.31	0.46	0	1	302	0.37	0.48	0	1	0.06
Terracing	393	0.21	0.41	0	1	302	0.24	0.43	0	1	0.03
Wells	393	0.03	0.18	0	1	302	0.03	0.18	0	1	0

Statistical significance is denoted by the following: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

### 6.2.2.1 HOUSEHOLD INVESTMENT AND WIVES' SURVEY

As noted in the LTA theory of change and in the evaluation design proposal, secure tenure may lead to increased access to finance, as farmers have formal documentation for collateral, and an improved ability to buy, sell, or rent land. The midline survey asked respondents the same questions related to borrowing activity as the baseline survey.

As shown in Table 24, there was no change in the percentage of the treatment group sample that borrowed money between baseline and midline. However, the percentage of comparison group heads of household who reported borrowing funds decreased over this period, from 12 percent at baseline (n=49) to 8 percent at midline (n=23) ( $p<0.01$ ). Nine of the 15 treatment villages went through the full LTA implementation process and received CCROs by midline. However, it may take longer than six months for a household to go from obtaining land documentation to utilizing it for increased financial activity.

The evaluation team found limited initial changes for wives in the treatment sample. The exception was their awareness of the presence of women's groups (Table 25). The percentage of respondents who were aware of women's groups increased from 57 percent (n = 111) to 73 percent (n = 104), a statistically significant increase ( $p<0.01$ ). Awareness on this measure also increased for wives in the comparison group (Table 26). Though the change was slightly smaller (53 percent, n = 107 to 69 percent, n = 111), it, too, was statistically significant ( $p<0.01$ ). The general increase in awareness of women's groups will be explored during endline data collection and qualitative interviews to determine if it is due to LTA's broadcasts or other outreach in Iringa.

Women's tenure security is often compromised by land grabbing from family members, after the death of a spouse, for example. There was no statistically significant change in the percentage of respondents in either group who reported that it was likely that family members could take their land without permission. Seventy-eight percent (n = 111) of the treatment group sample and 66.4 percent (n = 107) of the comparison group sample reported this at midline (Table 27).

Women in the treatment group reported an increase in joint decision making on farming. There was a statistically significant increase in joint decision making for food crops in the treatment group ( $p<0.05$ ) from 72 percent (n = 134) to 81 percent (n = 112). During the same period, there was a slight decline in joint decision making regarding food crops in the comparison group. A statistically significant change occurred ( $p<0.05$ ) in joint decision making on parcel use for the treatment group. This measure increased in both percentage and numerical terms from 37 percent (n = 73) to 67 percent (n = 96) between survey rounds. Notably, in both assignment groups, a small percentage of wives reported being the lead decision maker on parcel use and parcel income, as shown at the bottom of Table 27.

**TABLE 24: SUMMARY STATISTICS ON BORROWING BY ASSIGNMENT AND SURVEY ROUND**

Treatment Group											
Variable	Baseline					Midline					Mean Diff.
	n	Mean	SD	Min	Max	n	Mean	SD	Min	Max	
Borrowed money in the past six months (I=Yes, 0=No)	389	0.11	0.32	0	1	303	0.12	0.32	0	1	0.01
Approximate total borrowed in past year (in TZS)	44	791,886	2,172,814	20,000	10,000,000	36	276,306	296,940	5,000.00	1,500,000	-515580
Would household be able to obtain a loan if needed (I=Yes, 0=No)	389	0.51	0.5	0	1	303	0.61	0.49	0	1	0.1***
Comparison Group											
Variable	Baseline					Midline					Mean Diff.
	n	Mean	SD	Min	Max	n	Mean	SD	Min	Max	
Borrowed money in the past six months (I=Yes, 0=No)	393	0.12	0.33	0	1	302	0.08	0.27	0	1	-0.04**
Approximate total borrowed in past year (in TZS)	49	488,860	1,030,412	3,000.00	5,000,000	23	586,522	1,648,693	1	8,000,000	97662
Would household be able to obtain a loan if needed (I=Yes, 0=No)	393	0.51	0.5	0	1	302	0.56	0.5	0	1	0.05

Statistical significance is denoted by the following: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**TABLE 25: SUMMARY STATISTICS OF TREATMENT GROUP WIVES BY SURVEY ROUND**

Treatment Group											
Variable	Baseline					Midline					Mean Diff.
	n	Mean	SD	Min	Max	n	Mean	SD	Min	Max	
How many group/village meetings have you attended in the past six months?	196	2.51	2.56	0	17	143	2.57	1.91	0	10	0.06
Are there women's group in your village or the surrounding area? (I=Yes, 0=No)	196	0.57	0.5	0	1	143	0.73	0.45	0	1	0.16***
Number of women's groups attended	111	2.21	5.67	0	52	104	2.25	4.14	0	24	0.04
Do you feel comfortable speaking at village meetings or in group settings (I=Yes, 0=No)	196	0.59	0.49	0	1	143	0.58	0.5	0	1	-0.01
Has your household borrowed money in the past 12 months (I=Yes, 0=No)	196	0.19	0.39	0	1	142	0.19	0.39	0	1	0

Statistical significance is denoted by the following: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**TABLE 26: SUMMARY STATISTICS OF COMPARISON GROUP WIVES BY SURVEY ROUND**

Variable	Comparison Group										Mean Diff.
	Baseline					Midline					
	n	Mean	SD	Min	Max	n	Mean	SD	Min	Max	
How many group/village meetings have you attended in the past six months?	201	2.3	2.42	0	17	161	2.34	2.12	0	15	-0.08
Are there women's group in your village or the surrounding area? (1=Yes, 0=No)	201	0.53	0.5	0	1	162	0.69	0.47	0	1	0.19***
Number of women's groups attended	107	2.5	5.81	0	26	111	3	6.65	0	38	-2.81
Do you feel comfortable speaking at village meetings or in group settings (1=Yes, 0=No)	201	0.59	0.49	0	1	162	0.67	0.47	0	1	0.18
Has your household borrowed money in the past 12 months (1=Yes, 0=No)	201	0.22	0.42	0	1	162	0.14	0.35	0	1	-0.28**

Statistical significance is denoted by the following: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**TABLE 27: FREQUENCIES OF TENURE SECURITY AND DECISION MAKING**

Likelihood of land seizure from family members									
Treatment Group					Comparison Group				
Response	Baseline		Midline		Response	Baseline		Midline	
	n	%	n	%		n	%	n	%
Don't know	6	3.1	3	2.1	Don't know	9	4.5	1	0.6
Likely	10	5.1	10	7.0	Likely	20	10.0	8	5.0
Neutral	17	8.7	10	7.0	Neutral	14	7.0	15	9.3
Somewhat unlikely	16	8.2	4	2.8	Somewhat unlikely	14	7.0	16	9.9
Very Likely	8	4.1	5	3.5	Very Likely	10	5.0	14	8.7
Very unlikely	139	70.9	111	77.6	Very unlikely	134	66.7	107	66.5

Food crop farming decisions									
Treatment Group					Comparison Group				
Response	Baseline		Midline		Response	Baseline		Midline	
	n	%	n	%		n	%	n	%
Self	12	6.4	2	1.5	Self	7	3.6	4	2.5
Spouse	41	21.9	24	17.4	Spouse	33	17.0	33	20.9
Both spouse and self (joint decision making)	134	71.7	112	81.2	Both spouse and self (joint decision making)	154	79.4	121	76.6

Cash crop farming decisions									
Treatment Group					Comparison Group				
Response	Baseline		Midline		Response	Baseline		Midline	
	n	%	n	%		n	%	n	%
Self	0	0	1	3.6	Self	0	0	1	3.5
Spouse	13	31.7	5	17.9	Spouse	6	17.1	5	17.2
Both spouse and self (joint decision making)	28	68.3	22	78.6	Both spouse and self (joint decision making)	29	82.9	23	79.3

How confident are you that you would receive a fair hearing if you had a land dispute?									
Treatment Group					Comparison Group				
Response	Baseline		Midline		Response	Baseline		Midline	
	n	%	n	%		n	%	n	%
Not confident	23	11.7	11	7.7	Not confident	15	7.5	16	9.9
Somewhat confident	60	30.6	42	29.4	Somewhat confident	65	32.3	52	32.3
Unsure	23	11.7	11	7.7	Unsure	15	7.5	10	6.2
Very confident	83	42.4	78	54.6	Very confident	99	49.3	80	49.7
Very unconfident	7	3.6	1	1.0	Very unconfident	7	3.5	3	1.9

### Who primarily decides how to use this household's parcels?

Treatment Group					Comparison Group				
Response	Baseline		Midline		Response	Baseline		Midline	
	n	%	n	%		n	%	n	%
Both spouse and self (joint decision making)	73	37.2	96	67.6	Both spouse and self (joint decision making)	97	48.3	100	61.7
Spouse	108	55.1	40	28.2	Spouse	90	44.8	52	32.1
Other household member	15	7.7	0	0	Other household member	14	7.0	0	0
Self	0	0	6	4.2	Self	0	0	10	6.2

### Who primarily decides how to use income from this household's parcels?

Treatment Group					Comparison Group				
Response	Baseline		Midline		Response	Baseline		Midline	
	n	%	n	%		n	%	n	%
Both spouse and self (joint decision making)	100	51.0	97	68.3	Both spouse and self (joint decision making)	115	57.2	111	68.5
Spouse	80	40.8	38	26.8	Spouse	73	36.3	43	26.5
Other household member	16	8.2	1	1.0	Other household member	13	6.5	0	0
Self	0	0	6	4.2	Self	0	0	8	4.9

## 6.3 ESTIMATION APPROACH

As noted in the overview to section 6, the analysis of outcomes at midline is primarily designed to provide updated information on the implementation process and a preliminary understanding of potential change in impacts at this early stage of activity implementation. At midline, we focus on assessing a select sub-set of outcomes for which it is reasonable to anticipate potential change at this stage of implementation. The midline analyses focus on select outcomes for four of the five outcome families/thematic areas<sup>30</sup> on which the evaluation questions are focused: tenure security and land management; land disputes; investment and land use; and empowerment. As noted, midline data collection only six months after the start of implementation narrows down this list considerably, and reduces the likelihood that investment and other economic outcomes will have accrued at scale at this early stage in the project. However, we retain at midline some key outcomes under this theme to provide a benchmark understanding of change prior to endline. We do not include food security variables at midline due to the seasonal difference in data collection between baseline and midline.

The evaluation team conducted midline analysis of impacts for the following 10 outcomes:

- I. **Tenure security and land management:**
  - a. Familiarity with land laws
  - b. Household possesses land-related documentation
  - c. Expropriation risk
  - d. Following risk

<sup>30</sup> These are tenure security and land management; land disputes; investment and land use; empowerment; and economic and environmental outcomes.

## 2. Land disputes:

- a. Incidence of land disputes in past year (noting this is a low frequency event at baseline and midline)
- b. Duration of land disputes (in months)

## 3. Investment and land use:

- a. Total land holding by household (in ha)
- b. Credit access by household<sup>31</sup> (over the past six months)
- c. Incidence of tree planting on farms (fruit and non-fruit trees)

## 4. Empowerment:

- a. Land-related decision-making power exclusively by male household head

We use the fixed effects difference-in-difference (DID) panel regression specification below to test for the impact of the LTA activity on each of the above outcomes. The model includes a set of pre-treatment covariates to control for potential differences in the treatment and control groups, and village-level fixed effects that control for time-invariant unobserved factors. The treatment effect is estimated by a regression coefficient on a dummy variable that interacts time and treatment. For continuous outcome variables at the household level, the panel regression models take the following form:<sup>32</sup>

$$Y_{it} = \gamma_0 + \gamma_1 X_{it} + \gamma_3 \delta_t + \beta(\delta_t * T_i) + \gamma_i + \varepsilon_{it} \quad (1)$$

Where:

$Y_{it}$  is the outcome of interest for household  $i$  at time  $t$ ,

$X_{it}$  is a vector of covariates,

$\delta_t$  is a dummy variable equal to 1 at the midline,

$T$  is a dummy variable equal to 1 for members of the treatment group,

$\gamma_i$  is a vector of village-level fixed effects

$\varepsilon_{it}$  is a random error term,

and  $\gamma$  and  $\beta$  are parameters to be estimated.

We use robust standard errors clustered at the village level. The estimate of LTA impact is given by  $\beta$ , which reflects the Average Treatment Effect. Under standard assumptions,  $\beta$  provides an unbiased estimate of the causal impact of the LTA activity on the outcome  $Y$ . We also include a set of individual, household, or village level control variables measured at baseline to further improve the precision of the outcome estimates. These are: Gender of household head; Household head age; Head education level; and Village distance to Iringa Town (driving distance in kilometers).

*Alternative Specification:*

For added robustness, we run the alternative specification below.

$$Y_{ij} = \beta_0 + \beta_1 T_{ij} + \beta_2 X_{ij} + Y_{ij}^0 + \gamma_i + \varepsilon_{it} \quad (2)$$

Where  $Y_{ij}$  is the outcome measured for household  $i$  in village  $j$  measured at midline;  $T_{ij}$  is a dummy which indicates treatment status;  $X_{ij}$  is a vector of co-variates as listed above;  $Y_{ij}^0$  is the value of the outcome as measured at baseline;  $\gamma_i$  is household fixed effects; and  $\varepsilon_{it}$  is the error term. Robust

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<sup>31</sup> Note this excludes informal lending by friends, neighbors, or families, but includes all formal sources of credit, such as from banks and micro-finance institutions, as well as informal lending from community savings and loans groups.

<sup>32</sup> Note that logit models are used for binary outcomes.

standard errors clustered at the village level are also used. Under this analysis of co-variance (ANCOVA) approach, the main control variable is the baseline value of the outcome variable.

### Limitations of Midline Analyses

- **Timing of midline data collection.** The collection of the midline data only six months after the start of implementation, rather than one year into implementation as initially planned by the evaluation team, is likely to result in smaller observable impacts, and fewer significant outcomes, at this stage. This is because at the timing of the current midline, there has been less time for such impacts to accrue at scale for LTA beneficiaries. The evaluation team aimed to mitigate this issue by focusing on a select number of intermediate outcomes for the midline analyses. In addition, the seasonal timing of midline data collection could have some implications for reliability of measurements for some indicators across the two survey rounds. However, the indicators used for the midline analyses are not considered by the evaluation team to be highly susceptible to this seasonal difference, with the potential exception of the incidence of tree planting on farms. At endline, the evaluation team aims to replicate the seasonal timing of the baseline sample.
- **Limited observations.** This evaluation is designed to examine impacts across 30 treatment villages where the LTA activity is implemented. The evaluation team anticipates this to be a sufficient sample size to detect impacts on outcomes of interest, particularly tenure security, investment, and empowerment, based on power calculations conducted to date. However, a larger number of village clusters would generally be preferable for cluster-randomized designs. The small number of villages for this IE presents some risks for the ability to make causal linkages of the LTA activity to certain outcomes and impacts further down the causal chain. For example, sustainable land clearing practices will ideally lead to lower greenhouse gas emissions, but it is doubtful that the effects of this can be measured within the timeframe and from the limited number of villages under study for this IE. The evaluation team will address this issue by measuring more proximate outcomes and indicators that are highly correlated with impacts that take longer to accrue. Since the Phase I midline is conducted on half the total evaluation sample, constraints due to limited sample size are even more salient at this stage.

## 6.4 DISCUSSION OF RESULTS

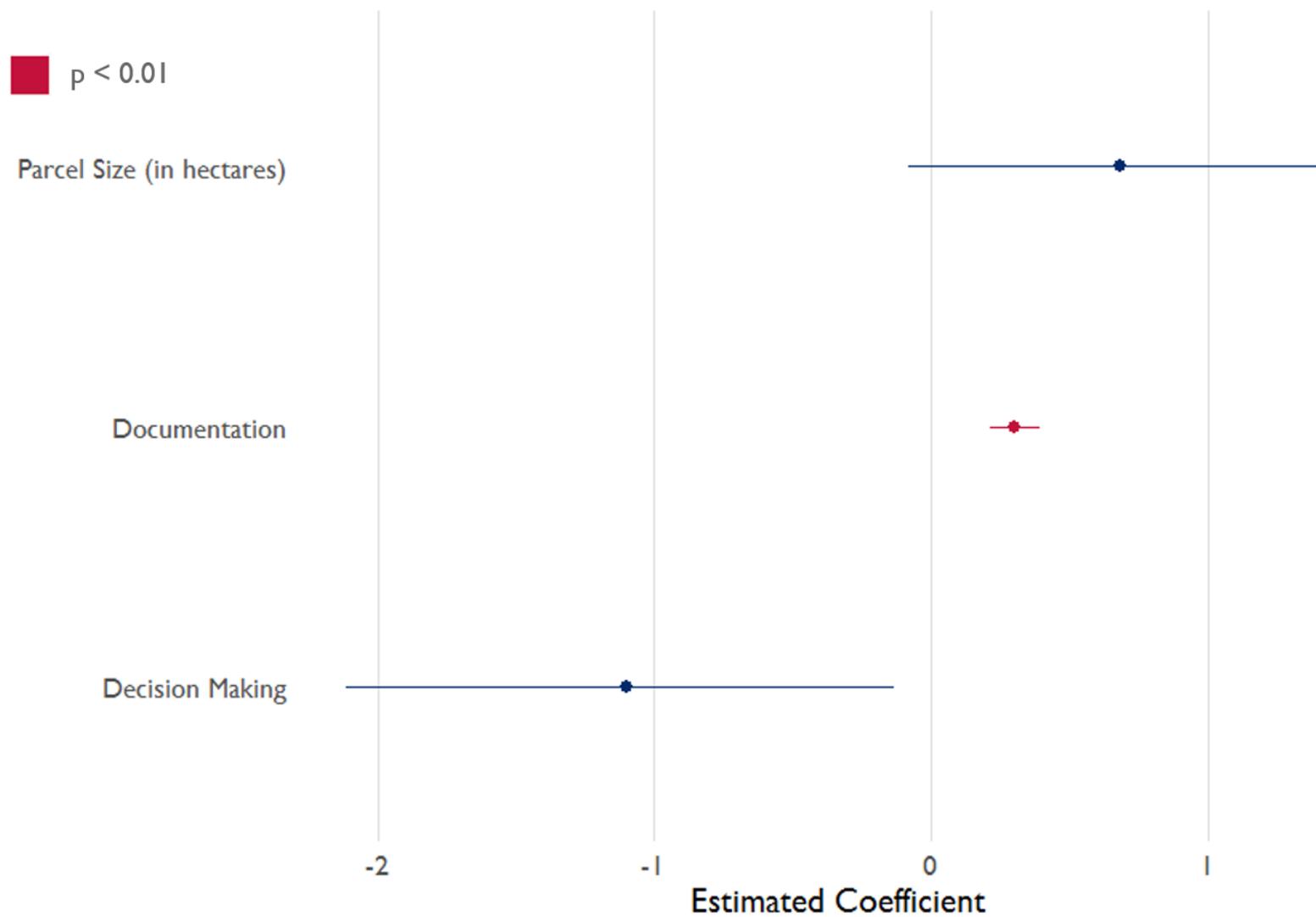
This section provides a summary of key findings from the Phase I midline analysis of LTA impacts on select tenure security, land disputes, land use and investment, and empowerment outcomes. Table 28 presents impact estimates for each of the ten outcomes measured at midline, while Figure 16 enables a comparison of the magnitude and statistical significance of each outcome assessed. The results suggest statistically significant and positive impacts for the following three indicators:

Household possession of land-related documentation: Results suggest that holding household head gender, age, education level, and village distance to Iringa constant, there is, on average, a 29.8 percent increase in the likelihood of a household having land documentation at midline, for households in the treatment group relative to those in the comparison group. The magnitude of impact is relatively large, and the statistical significance is robust to alternative model specifications. This finding is not necessarily surprising, since LTA has been actively working to issue CCROs to households in activity villages, and LTA M&E data confirm that the activity has been fairly successful in achieving wide scale issuance of CCROs to households. The measure provides an overall estimate for the household, rather than one disaggregated by respondent type, but inclusion of a gender covariate for the household head in the estimation model was not significant. The results provide useful confirmation that the project has been successful in increasing land documentation among project beneficiaries, a key intermediate outcome in the causal chain to improved tenure security impacts.

**TABLE 28: FIXED-EFFECTS REGRESSION RESULTS**

<b>Variable</b>	<b>Estimate (log odds)</b>	<b>P-value</b>	<b>95% CI</b>	<b>Total n</b>	<b>Treatment n</b>	<b>Comparison n</b>
Familiarity with land laws	0.63	0.22	-0.37 1.66	1,807	882	925
Household possesses land-related documentation	0.29***	0.00	0.21 0.39	1,198	588	610
Expropriation risk	-0.94**	0.04	-1.96 0.08	1,198	588	610
Fallowing risk	0.00	0.98	-0.48 0.49	1,807	882	925
Incidence of land disputes in past year	0.14	0.38	-0.18 0.47	95	46	49
Duration of land disputes (in months)	-0.03	0.96	-1.56 1.48	95	46	49
Total land holding by household (in ha)	0.67*	0.06	-0.02 1.30	1,198	588	610
Credit access by household (over past six months)	0.91	0.03	0.11 1.74	1,198	588	610
Incidence of tree planting on farms (fruit and non-fruit trees)	0.80**	0.02	0.15 1.45	1,545	758	787
Land-related decision-making power exclusively by male household head	-1.10**	0.03	-2.15 0.03	610	294	316

**FIGURE 16: STATISTICALLY SIGNIFICANT (MINIMUM P<0.10) OUTCOMES**



Household total landholdings: Results suggest that, on average, total landholdings by treatment group households has increased by 0.67 ha relative to comparison group households at midline. However, the magnitude of impact is fairly small and the results are only marginally significant ( $p < .10$ ). The statistical significance of the land holding results are variable under alternative model specifications, while there is currently little supporting evidence in the midline data to explain if or why households in LTA villages are using their increased familiarity with land laws and possession of CCROs to expand their landholdings. It is also possible that the mapping of individual parcels conducted by LTA provides households in the treatment group with an updated understanding of their actual plot size, and that respondents underestimate their actual acreage at baseline, prior to obtaining that knowledge. Given a range of potential explanations, this intermediate finding should be interpreted with caution. It will be investigated further at endline, when the combination of three time points of panel survey data collection and qualitative data collection will enable a stronger understanding of the validity and reasons for this trend.

Land-related decision-making power exclusively by the male household head: Results suggest that, holding the same household and village factors constant as above, there has been an 11.4 percent decrease in the likelihood of a land-related decision solely by the male household head, for treatment group households. The magnitude of impact is somewhat smaller across alternative model specifications, but the significance of the effect remains. This finding suggests that LTA activities designed to inform women of land rights and to encourage their management and decision making regarding land they use appear to have begun to take hold.

Thus, at this early midline stage, LTA implementation may be having positive impacts on some of the key intermediate outcomes, across three of the four outcome categories assessed at this stage. Under the LTA theory of change, continuation of such impacts over the activity's lifetime is expected to lead to significant improvements in longer terms outcomes, such as increased agricultural productivity and household income. The midline analysis did not find statistically significant impacts for the remaining outcomes assessed at this stage. However, this may not be surprising, given that the analyses measure impacts for activities that have only been underway for six months. The generally low proportion and lack of change in household familiarity with land laws for the treatment group may indicate that project messaging on this has not yet taken hold. In addition, households that have only recently obtained their CCROs and begun to understand their potential benefit for securing their landholdings may not yet have experienced a lower expropriation risk, or changed their land investment behavior accordingly. Overall, the midline results (1) indicate that achievement of some of the anticipated LTA impacts appears to be underway, (2) confirm the validity of the IE design and sample power, (3) highlight the role that endline qualitative data collection is likely to play in helping to explain impacts at endline, and (4) re-confirm the utility of measuring longer term outcomes as planned at endline.

## ANNEX A: EVALUATION STATEMENT OF WORK

### Impact Evaluation of the Feed the Future Tanzania Land Tenure Assistance Activity

This Statement of Work is for an impact evaluation commissioned by the United States Agency for International Development (USAID) that will examine the Feed the Future Tanzania Land Tenure Assistance (LTA) Activity.

#### I. Project Information

LTA is a four-year activity awarded by USAID/Tanzania to DAI in 2015 and is a part of the Feed the Future (FTF) initiative. The LTA activity seeks to clarify and document land ownership, support land use planning efforts, and increase local understanding of land use and land rights in Tanzania. It is envisioned that the interventions carried out under LTA will reduce land tenure-related risks and lay the groundwork for sustainable agricultural investment for both smallholder farmers and commercial investors throughout the Southern Agricultural Growth Corridor of Tanzania (SAGCOT) and in the value chains of focus for Tanzania's FTF program.

The LTA activity was designed in line with the Government of Tanzania's (GOT) land tenure objectives to safeguard USAID's ongoing agricultural and economic growth investments and to protect the interests of the private sector and local communities. The activity seeks to achieve these goals by:

1. Assisting villages in completing the land use planning process and delivering Certificates of Customary Right of Occupancy (CCROs) through the use of open source mobile technology developed under USAID's Mobile Application to Secure Tenure (MAST) pilot activity;
2. Developing the capacity of village and district land governance institutions, and individual villagers, to complete the land use planning and CCRO process, effectively manage land resources, respect women's land rights, and build agriculture-related business skills through education and awareness-raising activities; and
3. Raising awareness of the MAST technology within the GOT, civil society, academia, and the private sector, with the goal of increasing uptake of the technology on a national level.

LTA is comprised of two larger activities (1 and 2) and two smaller activities (3 and 4), described below. Local sustainability is a critical component of the overall LTA activity. The goal of LTA is to empower district and village land institutions in targeted districts to carry forward the capacity development and land administration process independently (and with little or no outside financial support) once the activity concludes.

- Activity 1: Assist villages and district administrations in completing the land use planning process and delivering CCROs in select villages within two districts (Iringa and Mbeya).
- Activity 2: Educate and develop the capacity of village land governance institutions and individual villagers to complete the land use planning and CCRO process, effectively manage land resources, respect the land rights of women, youth, and pastoralists, and build agriculture-related business skills.
- Activity 3: Educate and develop the capacity of district-level land governance institutions in the Mbeya District to complete the land use planning and CCRO process; effectively manage land

resources; respect the land rights of women, youth, and pastoralists; and build agriculture-related business skills.

- Activity 4: Develop capacity to use the MAST application throughout the SAGCOT and nationally.

DAI plans to implement LTA in five to six test villages over the summer of 2016. These initial villages are likely to be in Iringa District, due to Ministry preferences, but may be in Mbeya District as part of the LTA's capacity development activities. Full rollout of LTA is expected to occur in early 2017 in Iringa District, with at least 30 villages selected to receive the interventions.

## 2. Development Hypothesis

USAID envisions that if the LTA activity clarifies and documents land ownership, supports land use planning efforts, and increases local understanding of land use and land rights, then this will lead to increased agricultural investment, reduced land tenure risk, and more empowered people and local institutions. The LTA activity components work in tandem to promote inclusive agricultural development, food security and investment, and institutional capacity.

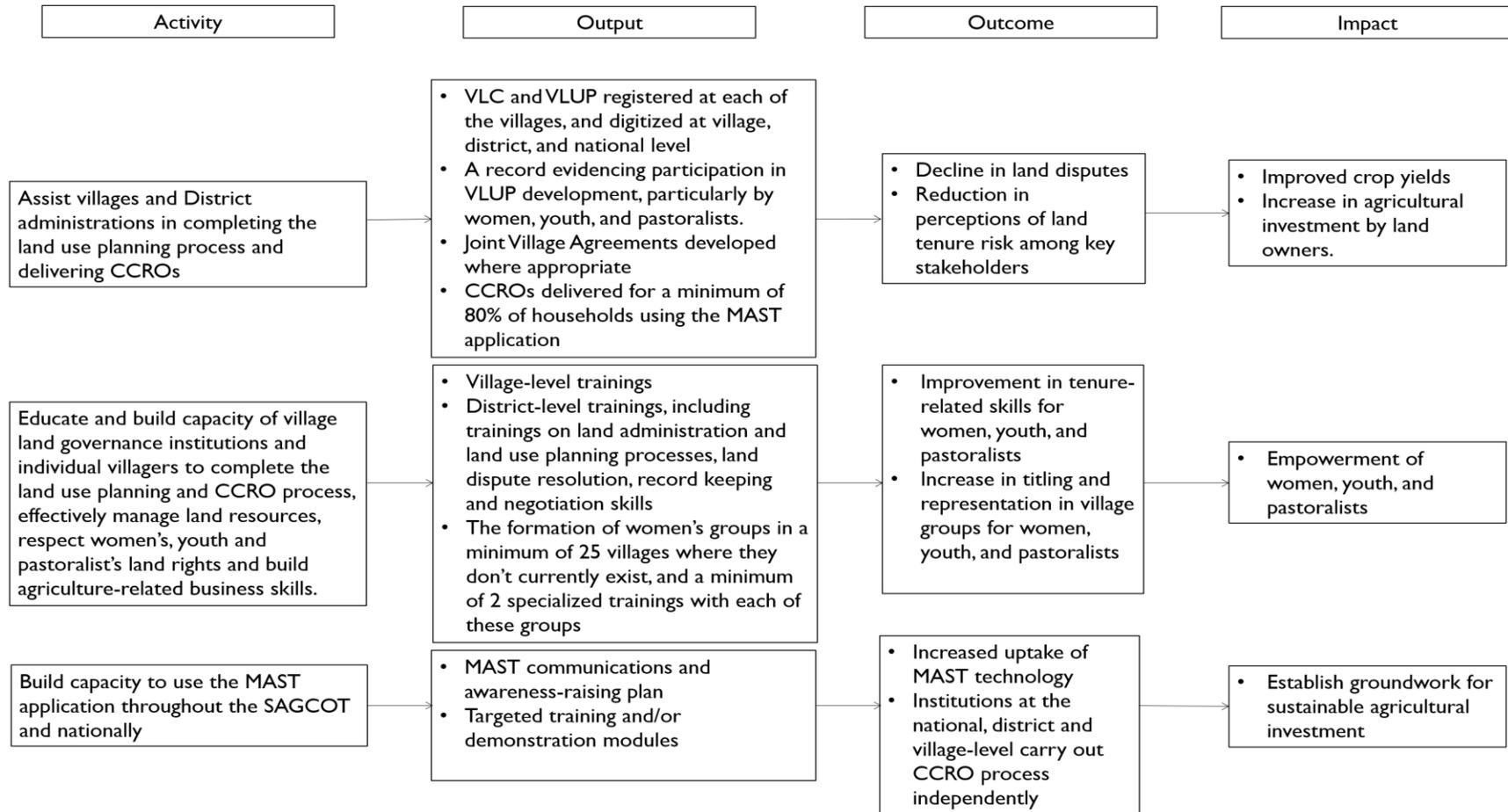
This section provides a preliminary version of the development hypotheses and causal linkages that the evaluation will consider, which will be refined and further elaborated in the Evaluation Design Proposal. Figure 1 illustrates the causal linkages that USAID envisions for translating results under each of the activities<sup>33</sup> into the LTA activity's intended intermediate and final outcomes and that this evaluation will be expected to examine. In this Theory of Change diagram, the proliferation of CCROs leads to increased investment and reduced disputes through improved perception of tenure security. As illustrated in the diagram, the possible hypotheses for examination within the LTA activity could include:

1. If villages and district administrations receive assistance for completing the land use planning process and delivering CCROs to formalize land rights, then disputes over land tenure will decline and crop yields will improve.
2. If village land governance institutions and individual villages are educated and trained on the land use planning and CCRO process, including on respecting the land rights of women, youth, and pastoralists, then women, youth, and pastoralists will experience an increase in titling, improvement in skills, and have better representation in their villages.
3. If the LTA activity develops capacity to use the MAST application throughout the SAGCOT and nationally, then communities and institutions at all levels will be able to sustainably certify land tenure, which will promote agricultural commercial activity and investment.

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<sup>33</sup> Only three activities are shown in the Theory of Change diagram, since Activity 3 is specific to Mbeya District, and this evaluation will largely focus on Iringa District.

**FIGURE 1: THEORY OF CHANGE FOR THE LTA ACTIVITY**



### 3. Existing Performance Information Sources

The LTA activity is currently in its start-up phase and is developing an inception report that will outline its approach to implementation. There have been similar, albeit smaller scale, land rights interventions in Tanzania that utilize mobile technology,<sup>34</sup> but these have not been rigorously evaluated. The evaluation team has received limited documentation on the LTA activity's implementation plans to date, but USAID and DAI have committed to share all implementation reports, results frameworks, and survey materials as they become available.

USAID has already provided the evaluation team with the following documents and data related to the LTA activity:

- Scope of Work for the LTA Request for Task Order Proposals (RFTOP)
- USAID/Tanzania letter to the Ministry of Lands, Housing, and Human Settlement Development
- Iringa Village Data
- Iringa District Map with potential selection sites

The following additional documents have not yet been provided to the evaluation team but will be shared as the evaluation progresses:

- DAI proposal for LTA RFTOP
- Results framework from DAI for LTA
- All future quarterly and annual project management and progress reports prepared by DAI for LTA
- Copies or detailed descriptions of content of land tenure campaigns
- Documents pertaining to the certification, selection, and implementation of tenure projects
- Annual USAID/Tanzania LTRM Survey materials, including M&E data, sampling plans, and survey instruments

In addition to information provided by USAID and DAI, the evaluation team may need to access other types of secondary data, including administrative information on the relevant Tanzanian municipalities from a variety of sources, including Government of Tanzania (GOT) statistical agencies. The evaluation team will work with USAID and DAI as needed to obtain relevant introductions and permissions to access any such data that are needed.

### 4. Evaluation Purpose, Audience, and Intended Use

#### Purpose

The purpose of this impact evaluation is to provide USAID with an evidence base on the impacts of its investment in the LTA activity and also to build the evidence base on the impacts of land mapping, registration, and formalization in rural customary land tenure settings in Tanzania. The results of this evaluation will be made widely available to encourage replication within or beyond Tanzania, as applicable. As such, this evaluation will apply USAID's *Evaluation Policy* guidance with respect to using the most rigorous evaluation design and methods possible to demonstrate accountability for achieving results. The evaluation is also designed to capture practical lessons from USAID's experience with

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<sup>34</sup> Mobile technology refers to MAST, which uses open source code and readily available mobile technologies (e.g., GPS/GNSS-enabled smart phones and tablets) coupled with broadly participatory crowd-sourced data collection methods.

regard to increasing sustainable agricultural investment by securing land tenure through first-time registration.

## **Audience**

The evaluation is aimed at several audiences. First, the findings are expected to be of value from an accountability and learning standpoint to USAID. Secondly, findings and lessons learned from this evaluation will also be of interest to the GOT, which aims to scale CCRO delivery rapidly across the country, and to DAI and other practitioners in the land tenure sector working to document customary land rights. Finally, the evaluation will be of interest to donors, implementers, and scholars more generally by making an important contribution to the evidence base on land tenure interventions.

## **Intended Use**

This evaluation will be used to inform the design of future donor and government activities that aim to improve tenure security and generate economic benefits by strengthening land rights. One such activity is the upcoming Land Tenure Support Program, a large-scale effort jointly funded by DfID, SIDA, and DANIDA.

## **5. Evaluation Questions**

The evaluation will address a specific set of evaluation questions that will be developed and finalized in close collaboration between USAID/E3/Land, USAID/Tanzania, the evaluation team, DAI, and other stakeholders as appropriate. This SOW will be updated following final agreement on the evaluation questions.

In general, the evaluation questions are expected to focus on the impact of the LTA activity on four types of outcomes:

1. **Investment:** by improving tenure security and reducing disputes, LTA is also anticipated to stimulate small-scale agricultural investment. Stronger land rights increase landholders' confidence that they will be able to reap the benefits of investments in their land that pay off over time. Such investments may include small-scale irrigation technology, soil conservation measures, or switching to perennial crops such as coffee, cashews, or fruit trees. The existing evidence on the relationship between land rights and these kinds of investments shows considerable variation in the levels and types of impacts that are observed; a summary and meta-analysis of the evidence from West Africa is provided by Fenske (2011).
2. **Perceived tenure security:** an important outcome associated with LTA is the extent to which beneficiaries perceive the activity as having strengthened their land rights. In practice, this means that LTA should reduce beneficiaries' concerns that their land could be expropriated, or that they could face costly disputes related to their land. Measuring the activity's impact on these kinds of perceptions requires careful attention to the context, so that survey questions can be structured around the particular issues and concerns that beneficiaries face. A number of previous impact evaluations commissioned by USAID/E3/Land have considered these issues, and the impact evaluation of LTA will draw on these experiences in developing its approach to measuring tenure security.

3. Incidence of land-related disputes or disputes: in addition to changing perceptions, another outcome that the evaluation may consider is the actual incidence of disputes and disputes over land. As above, careful attention to context is needed in designing the approach to measuring these outcomes. While reducing land dispute is an important outcome, a potential challenge with measuring impacts on dispute is that interventions such as those under LTA can actually increase the incidence of land disputes in the short run. For example, disputes may arise in the course of establishing boundaries, or latent disagreements about land rights may rise to the surface in the course of establishing formal claims. Such disputes were observed for the first MAST pilot site, with several reported cases of border disputes, intra-family disputes over ramifications for inheritance, as well as former residents returning to try to reassert old claims when they learned that land registration was occurring. In course of finalizing the evaluation questions, the evaluation team should assess the potential for the evaluation to accurately measure these kinds of outcomes within the anticipated timeframe for the evaluation.
4. Empowerment: the evaluation will also consider outcomes related to empowerment. Empowerment is often considered from the standpoint of potentially vulnerable sub-groups such as women, youth, or the poor, and can also be conceptualized more generally. A World Bank study by Alsop and Heinsohn (2005) defines empowerment broadly as “as a person’s capacity to make effective choices; that is, as the capacity to transform choices into desired actions and outcomes,” and presents a framework for measuring different dimensions of empowerment. In the context of LTA, strengthening land rights is expected to act on empowerment by improving security of assets that are critical to people’s lives in the household, community, and economy.

For the impact evaluation of LTA, empowerment outcomes are of particular interest in the context of gender. A recent paper by Allendorf (2007), for example, found that land rights are closely linked to women’s empowerment in Nepal. In addition, USAID has funded the development of the Women’s Empowerment in Agriculture Index, which is widely used to measure women’s empowerment in FTF activities. The Index includes a battery of survey questions and methods to measure various dimensions of empowerment, and could be incorporated directly into the household surveys for the LTA impact evaluation.

The types of outcomes described above reflect changes in behaviors and attitudes that are expected to be measurable over a relatively short timeframe (approximately one to two years following the conclusion of implementation). LTA is also anticipated to potentially impact a broader set of economic outcomes in the longer term, as the benefits of these changes in behaviors and attitudes are realized over time. These include frequency of land transactions, access to credit, agricultural productivity, and ultimately improvements to household income, consumption, and food security. In light of the limited evidence base on the impact of land tenure interventions - particularly in a randomized controlled trial (RCT) setting – the evaluation may also examine these longer-term outcomes. One approach would be for the evaluation to include an initial round of follow-up data collection and analysis focused on the four intermediate outcomes above, with a second follow-up at a later date to measure longer term impacts. This would allow the evaluation to generate useful findings within one to two years of implementation, while still taking full advantage of the learning potential of a RCT to investigate broader economic outcomes.

## 6. Gender Considerations

In line with USAID’s Gender Equality and Female Empowerment Policy and Automated Directives System 203.3.1.5, the evaluation will consider gender-specific and differential effects of LTA. The

evaluation team will disaggregate access and participation data by gender at multiple points along the Theory of Change diagram to analyze the potential influence these effects have on activities and outcomes. Data collected through surveys conducted under this evaluation will be gender-disaggregated to identify gender differences with respect to benefits and outcomes, as well as lessons learned from female title holders and farmers. The evaluation team will conduct further inquiry on gender themes as they emerge during data analysis.

## **7. Evaluation Methods**

### **Impact Evaluation Design**

Impact evaluations identify activity impact by comparing outcomes between activity beneficiaries to those of a control or comparison group of non-beneficiaries. The control or comparison group is intended to represent the counterfactual, or what would have happened in the absence of the LTA intervention. As per the USAID Evaluation Policy, impact evaluations using experimental designs – whereby units are randomly assigned to treatment and control groups – provide the most rigorous evidence of activity impact, and this will be the preferred approach for the LTA impact evaluation. Where randomized assignment is not feasible, quasi-experimental impact evaluation designs can be employed as an alternative.

The evaluation team responding to this SOW will work with USAID/E3/Land, USAID/Tanzania, and DAI staff to develop a design that suits the objectives, timing, and constraints of the LTA evaluation. The evaluation team will produce an Evaluation Design Proposal to be approved by USAID/E3/Land prior to site selection or randomization taking place. It is expected that the evaluation questions will be answered using an experimental or, if necessary, quasi-experimental design, and that a mixed-method approach may be suitable to answer the evaluation questions.

### **Data Collection Methods**

A range of methodologies can be used in impact evaluations, and the most appropriate approach in any particular case depends on a variety of factors including the goals of the evaluation, the outcomes to be measured, the nature of the activity being examined and its implementation approach, and the resources and timeframe available for the evaluation.

USAID anticipates that data collection for this evaluation will involve the use of household-level surveys that cover all of the villages targeted for LTA. This is likely to include a baseline survey that would be conducted before major LTA interventions commence. The survey would collect information on basic demographics, household and individual characteristics, and the outcomes of interest that the evaluation will measure. The evaluation team responding to this SOW shall provide further details on data collection methods and the specific survey methodology in the Evaluation Design Proposal, including proposing specific data collection methods on a question-by-question basis.

Pending further discussion with USAID and DAI, data collection for this evaluation may also include collecting village-level information about potential activity sites that can be used to determine which villages may be eligible to participate in the activity.

## **8. Data Analysis Methods**

In its Evaluation Design Proposal, the evaluation team responding to this SOW should propose specific data analysis methods on a question-by-question basis, including the appropriate mix of methods

necessary to estimate the impact LTA has on the primary outcomes of interest. Potential data analysis methods include difference-in-difference and multivariate regressions. The Evaluation Design Proposal should also explain what statistical tests will be conducted on data collected to address all evaluation questions, how qualitative data will be analyzed, and whether that analysis will allow the evaluation team to transform some data obtained from qualitative into quantitative form.

The Evaluation Design Proposal should also indicate and justify the evaluation team’s proposed sequencing of quantitative and qualitative data collection. For example, if key informant qualitative interviews are conducted during the endline data collection process, these lines of data may be collected and analyzed in parallel and only synthesized once data from all other sources are available.

## 9. Strengths and Limitations

The strengths and limitations of the LTA impact evaluation will depend on the final design proposed by the evaluation team in consultation with USAID and DAI. The final design should reflect a rigorous approach to answering the evaluation questions and contribute to the global knowledge on land tenure. One key contribution of this evaluation is that it is expected to specifically test the impact of LTA on women, youth, and pastoralists, which is a great contribution to the evidence base on land tenure and investment.

Sample size, activity reach, and implementation fidelity could all create internal validity limitations for this evaluation. Ensuring that the sample size achieves sufficient statistical power will be critical for identifying impact and answering the evaluation questions. In addition, ensuring that randomization is done properly and random assignment, if applied, is systematic will improve the internal validity of the evaluation but must be done in a transparent manner. Indirect contamination across treatment arms and control groups is always a possibility, which is why it is important for the evaluation team and the implementation team to coordinate from the outset.

## 10. Evaluation Deliverables

It is anticipated that the evaluation team responding to this SOW will be responsible for the deliverables listed in Table I. A final list of proposed deliverables and due dates will be included in the Evaluation Design Proposal for USAID’s approval.

**TABLE I: EVALUATION DELIVERABLES**

<b>Deliverable</b>	<b>Estimated Due Date</b>
1. Concept Paper, describing design and methodological options to answer the evaluation questions	TBD in consultation with USAID
2. Draft Evaluation Design Proposal	TBD in consultation with USAID
3. Final Evaluation Design Proposal, including data collection and analysis methods, evaluation instruments, team composition, and proposed timeline	TBD in consultation with USAID
4. Baseline Report	o/a 60 days following completion of baseline data collection
5. Fully cleaned, redacted, and documented baseline data submitted to DDL	o/a 90 days following completion of baseline data collection
6. Draft Evaluation Report	o/a 60 days following completion of endline data collection

<b>Deliverable</b>	<b>Estimated Due Date</b>
7. Final Evaluation Report	o/a 21 days following receipt of USAID comments on Draft Evaluation Report
8. Fully cleaned, redacted, and documented endline data submitted to DDL	o/a 90 days following completion of endline data collection

All documents and reports will be provided electronically to USAID no later than the dates indicated in the approved Evaluation Design Proposal. The format of the evaluation report should follow USAID guidelines set forth in the USAID Evaluation Report Template.

## **11. Team Composition**

The Evaluation Design Proposal should describe the specific composition and qualifications of the team members who will be carrying out this evaluation, including CVs for core team members. General qualifications and roles anticipated for the primary positions on the core evaluation team are listed below. Local survey research firm(s) with experience in the conduct of household surveys at the village level and/or qualitative data collection may also support the evaluation team, as necessary.

### **Principal Investigator**

The Principal Investigator for this impact evaluation will hold a Ph.D. in a relevant economic development field. S/he will have previous experience with land tenure programs and will have previously served as a team leader for one or more impact evaluation(s). Familiarity with a range of impact evaluation designs and with USAID evaluation guidance will be sought for this position. Experience in publishing evaluation research in peer-reviewed journals is desirable, as is experience working in East Africa. A demonstrated ability to gather and integrate both quantitative and qualitative findings to answer evaluation questions is expected. Demonstrated experience managing multinational teams and producing highly readable reports for USAID and its developing country partner audiences on a timely basis is expected. This individual will be primarily responsible for the quality of the evaluation design and its execution, particularly with respect to the evidence obtained on questions involving causality and the attribution of outcomes to USAID's intervention. This is not anticipated to be a full-time position.

### **Evaluation Specialist**

The Evaluation Specialist should have a graduate degree in a relevant social science field and may be a Tanzanian national. The individual will have sufficient previous experience with evaluations and other types of studies involving sample surveys to be actively engaged in efforts to oversee and ensure the quality of multiple rounds of household surveys, that data codebooks are clearly written, and that all study data prepared by local survey research firms can be properly transferred to USAID. Gender analysis experience is also desirable. This is not anticipated to be a full-time position.

## **12. USAID Participation**

The desirability of USAID participation in evaluation activities such as field reconnaissance will be considered in consultation with USAID and the evaluation team, and any specific roles and responsibilities of USAID staff will be described in the Evaluation Design Proposal.

### 13. Scheduling and Logistics

Figure 2 provides a preliminary timeframe for impact evaluation activities, which will be updated and refined by the evaluation team in its Evaluation Design Proposal. It is anticipated that implementation of LTA will occur at the start of FY17.

Figure 2: Preliminary Timeline for LTA Impact Evaluation

Tasks	FY 16		Implementation Period for LTA Project												FY 20				FY 21				
			FY 17				FY 18				FY 19												
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Concept Paper	■																						
Scoping Trip	■																						
Evaluation Design Proposal		■																					
Survey Pre-Test		■																					
Enumerator Training		■																					
Baseline Data Collection			■																				
Baseline Data Analysis and Report				■																			
Oral Presentation of Baseline Findings				■																			
LTA Program Implementation (100%)			■																				
Endline Data Collection and Analysis																						■	
Endline Report																						■	
Draft Final Report																							■
Oral Presentation(s)																							■
Final Report																							■

The evaluation team will be responsible for procuring all logistical needs such as work space, transportation, printing, translation, and any other forms of communication. USAID will offer some assistance in providing introductions to partners and key stakeholders as needed, and will ensure the provision of data and supporting documents as possible.

### 14. Reporting Requirements

The format of the evaluation report should follow USAID guidelines set forth in the USAID Evaluation Report Template (<http://usaidelearninglab.org/library/evaluation-report-template>) and the How-To Note on Preparing Evaluation Reports (<http://usaidelearninglab.org/library/evaluation-report-template>).

The final version of the evaluation report will be submitted to USAID and it is anticipated that it will not exceed 30 pages, excluding references and annexes.

All members of the evaluation team will be provided with USAID’s mandatory statement of the evaluation standards they are expected to meet, shown in the following text box, along with USAID’s dispute of interest statement that they should sign before field work starts.

## USAID EVALUATION POLICY, APPENDIX I

### CRITERIA TO ENSURE THE QUALITY OF THE EVALUATION REPORT

- The evaluation report should represent a thoughtful, well-researched and well organized effort to objectively evaluate what worked in the project, what did not and why.
- Evaluation reports shall address all evaluation questions included in the scope of work.
- The evaluation report should include the scope of work as an annex. All modifications to the scope of work, whether in technical requirements, evaluation questions, evaluation team composition, methodology or timeline need to be agreed upon in writing by the technical officer.
- Evaluation methodology shall be explained in detail and all tools used in conducting the evaluation such as questionnaires, checklists, and discussion guides will be included in an Annex in the final report.
- Evaluation findings will assess outcomes and impact on males and females.
- Limitations to the evaluation shall be disclosed in the report, with particular attention to the limitations associated with the evaluation methodology (selection bias, recall bias, unobservable differences between comparator groups, etc.).
- Evaluation findings should be presented as analyzed facts, evidence and data and not based on anecdotes, hearsay or the compilation of people's opinions. Findings should be specific, concise and supported by strong quantitative or qualitative evidence.
- Sources of information need to be properly identified and listed in an annex.
- Recommendations need to be supported by a specific set of findings.
- Recommendations should be action-oriented, practical, and specific, with defined responsibility for the action.

## 15. Budget

The evaluation team responding to this SOW will propose a notional budget for this evaluation, including cost implications of the methodological options proposed. A full detailed budget will then be prepared for USAID's approval.

## ANNEX B: PHASE II BASELINE SURVEY INSTRUMENT

### A. Introduction and Consent

Greetings! My name is. \_\_\_\_\_ I am from Research Solutions Africa (RSA) and is currently undertaking a survey on behalf of MSI/NORC, a contractor with the United States Agency for International Development, in conjunction with the Iringa District Land Office to learn more about villagers in this district.

We are currently visiting villages in Iringa to gain a better understanding of village land use, administration, and the local community. The answers from this questionnaire will be used to learn more about land-use and life in the village.

I will not tell anyone about your answers to these questions. Only the research team will view your responses. Although we will ask for information about this village and your experience here, we will never use personal information in our documentation and will not report sensitive village information to anyone. This survey does not mean that a project or NGO will come to this village, and your answers will not affect whether any future projects come to this village. The entire survey will take about 2 hours.

If you have any questions in the future, you can contact MSI via phone at XXX

Are you willing to proceed with the interview?

1. Yes.... >>>(Tick category of hhd respondent and proceed as appropriate)
2. No.... >>>(Tick respondent category and Terminate interview)

Category of household respondent

1. Male household head >>>Section B
2. Female household head >>>Section M
3. Head of household (for households with only one household head: widows/widowers/single parents/single-member households, etc.) >>> Section B

## ADMINISTRATIVE INFORMATION

### Household Number

**Date of interview:** DD MM YY  
**Time of interview:** Start HH MM Stop HH MM  
*(24 hour clock)*  
**Name of interviewer:**  
**Code of interviewer**  
**Place of interview:**

**Ward**  
**Village**

### Point of interview

1. Respondent's residence
2. In one of the household's parcel of land
3. Away from respondent's place of residence and/or parcel of land

### GPS Coordinates

**Number of visits** *(max. of 3)*

### Reason for call back

	1	Number of visits	
	2	3	
Refused to be interviewed	1	1	1
Target respondent not at home	2	2	2
Target respondent requested for a call back	3	3	3
No one in the household	4	4	4
Respondent <u>not able</u> to be interviewed due to medical reasons (very sick, dumb, etc.)	5	5	5
No adult member in the household	6	6	6
Language barrier	99	99	99
Not applicable	99	99	99
<b>Outcome of final visit</b>	<b>Successful</b>	<b>Incomplete</b>	<b>Replaced</b>

**Field quality control checks** (sign as appropriate)

Activity	Activity undertaken by	
	Interviewe	Supervisor
Reviewed		
Accompanied		
Back checked		
Called back		

**B. Household Roster and Information**

I would like to start this interview with a few questions about each of your household members.

	Name	Question	Response options/ <u>units</u>	Notes/instructions
Thank you for agreeing to take this survey. To start, I would like to ask you a few questions about your household and your role as the head of the household. B1	Hou_role	Are you the household head?	1 Yes 2 No	
B1.1	Hou_gender	What is the respondent's gender?	1 Male 2 Female	<input type="checkbox"/> If hou_role = 1 &hou_gender = 1 continue to hou_num_n and end survey at <input type="checkbox"/> If hou_role = 1 &hou_gender = 2 continue through end of survey (all modules) <input type="checkbox"/> If hou_role = 2 &hou_gender =2 go to Module L (Wives Survey) <input type="checkbox"/> If hou_role = 2 &hou_gender = 1, ask for household head, if the household head is not

available, continue to hou_num_n.				
B1.2	hou_num_n	How many members constitute this household?	Enter number of household members based on hou_nme.	
B1.3	hou_nme	Can you tell me the name of all the members of this household?		RECORD THE
B2	hou_tride_n	What tribe or tribes is each member of this household from? MARK ALL THAT APPLY (multiple answer)	<ul style="list-style-type: none"> <li>1. Hehe</li> <li>2. Bena</li> <li>3. Kinga</li> <li>4. Pangwa</li> <li>5. Maasai</li> <li>990.Other(specify)</li> </ul>	HOUSEHOLD MEMBERS BEGINNING WITH THE HOUSEHOLD HEAD, FOLLOWED BY THE SPOUSE AND THEN THE CHILDREN STARTING WITH OLDEST FIRST AND CONCLUDING WITH THE YOUNGEST. Repeat questions indexed _n for each of n household members
B3	hou_gender_n	What is [NAME]'s gender?	1= Male, 0= Female	
B4	hou_rel_n	How is [NAME] related to the head of the household?	<ul style="list-style-type: none"> <li>1. HEAD</li> <li>2. SPOUSE</li> <li>3.SON/DAUGHTER</li> <li>4. STEP SON /DAUGHTER</li> <li>5. SISTER/BROTHER</li> <li>6. GRANDCHILD</li> <li>7. FATHER/MOTHER</li> <li>8. OTHER RELATIVE(SPECIFY)</li> <li>9. LIVE-IN SERVANT</li> <li>990.OTHER NON-RELATIVES (SPECIFY)</li> </ul>	
B5	hou_age_n	How old is [NAME] in completed years?		Enter age. Enter 996 for Don't Know.
B6	hou_edu_n	What is the highest grade level that [NAME] has completed?	PRIMARY	Skip if younger than 15

B7	hou_rdwr_n	Can [NAME] read and write a simple sentence.	P1.....11 P2.....12 P3.....13 P4.....14 P5.....15 P6.....16 P7.....17 FORM F1.....21 F2.....22 F3.....23 F4.....24 'O'+COURSE.25 F5.....31 F6.....32 'A'+COURSE.33 DIPLOMA Diploma 1...34 Diploma 2 UNIVERSITY U1.....41 U2.....42 U3.....43 U4.....44 U5&+.....45 1. KISWAHILI 2. ENGLISH	
B8		What is the marital status of [NAME]?	3. KISWAHILI & ENGLISH 4. ANY OTHER LANGUAGE 5. NO 999.N/A (Younger than 15 years) 1. Married 2. Co-habitation	Skip to Hou_look_n if younger than 15  If 999 >>> Next
			3. Divorced 4. Separated 5. Widow/er 6. Never married	household member OR >>> Next Section

			990. Other (specify)	
B9	Hou_look_n	During the past 4 weeks, did [NAME] actively looked for work?	1. Yes 2. No 996. Don't know	
B10	Hou_take_n	Was [NAME] available to start a job if he/she found one?	1. Yes 2. No 996. Don't know	If Hou_look_n = 1
B11	hou_fwrkwet_n	Did [NAME] work on the household farm, including fields and kitchen garden, during the past short and long rainy season?	1. Yes 2. No 996. Don't know	
B12	Hou_fwrkdry_n	Did [NAME] work on the household farm, including fields and kitchen garden, during last year's dry season?	1. Yes 2. No 996. Don't know	
B13	Hou_status_n	Which of the following best describes the present situation of [NAME]?  READ OPTIONS OUT LOUD	996. Don't know 1. Housework / housewife 2. Student 3. Retired 4. Ill, disabled 5. Not working and not looking for work 990. Other	
B14	Hou_emptype_n	In what type of economic activity did [NAME] spend most of his/her time in the last 12 months:	(specify _____) 1. ON OWN/FAMILY FARM OR SHAMBA 2. UNPAID FAMILY HELPER (AGRIC) 3. UNPAID FAMILY HELPER (NON-AGRIC) 4. A PAID EMPLOYEE 5. SELF EMPLOYED	

**C. Agricultural Organizations, Services and Training**

	<b>Name</b>	<b>Question</b>	<b>Response options/units</b>	<b>Notes/instructions</b>
C1	org_protorg	Are you a member of a farmer association or cooperative?	1. Yes 2. No 3. Don't know	
C2	org_coop	Are you a member of any other kind of cooperative not related to agriculture?	1. Yes 2. No 3. Don't know	If 2 >>> C3
C2.1	org_coop_prd	What kind of cooperative?  SELECT ALL THAT APPLY	1. Political party 2. Village group (non-agric) 3. Education group 4. Religious group 990. Other (specify: _____)	If org_coop = yes
C3	org_srv	Did you or anyone in your household receive any agricultural extension services in the past 12 months?	1. Yes 2. No 996. Don't know	If 2 >>> C5
C3.1	org_prd	What kind of services were provided?	1. Access to improved seed 2. Fertilizer, pesticides and other chemical inputs 3. Tractor services 4. Marketing services 5. Transport services 6. The opportunity to participate in a value chain scheme 7. Help to form or strengthen farmer groups 8. Contract farming 9. Post-harvest processing of ANY of crops (including drying, sorting, packaging, and/or storing) 10. Purchasing of ANY of the crops 11. Training on agricultural production and/or processing 12. Training on business practices	If org_srv = yes

			990. Other, SPECIFY _____	
C3.2	org_used_srv	How often has anyone in your household made use of extension services in the past 12 months?	1 3 times or more 2 Once or twice 3 Never	
C4	org_trnd	In the past 12 months, have you or anyone in your household received any kind of community or organizational assistance related to agriculture, such as assistance from an NGO or community group?	1. Yes 2. No 996. Don't know	If org_trnd != 1 skip to next module If 2 OR 996 >>>Next Section
C4.1	org_what	What kind of services were provided?	1. Free food/maize distribution 2. Food-for-work programme or cash-for-work programme 3. Inputs-for work programme 4. Attended a training or workshop 5. Had an agent visit my/our parcel(s) 6. Read a pamphlet 7. Other assistance (not listed above)	
C4.2	org_frequ	For how many days in the past 12 months did you or anyone in your household received these services?	Enter days 1. One Acre Fund	
C5	org_name	Are you aware of these organizations working in your village?  MARK ALL THAT APPLY	2. Briten 3. Unicef 4. Eadd 5. Cuamm 6. Clinton Foundation 7. Tahea 8. Camfed 9. Cefa 10. Wopata 11. Jica 12. TIB 13. Concern 14. Tunajali 15. SNV 16. TNRF 17. TCD 18. IMO	Select all that apply

			19. Cheet 20. Restless Development 21. LEAT 22. Caltas	
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#### D. LandHoldings and Characteristics

	Name	Question	Response options/units		Notes/instructions
<i>Thank you for the earlier responses. I would now like to ask you a few questions about your landholdings and the parcels you farm.</i>					
D1	Lan_num	How many different parcels does the household own, rent, or use?	Enter number		
D2	Lan_name	Please give each parcel a name so we can keep track during the interview			If lan_num > 1. From here down, ask for each parcel.
D2.1	Lan_own	Which parcels does the household own?	Enter PARCEL ID		This should be left blank if no parcels are rented.
D2.2	Lan_own	Which parcels does the household rent?	Enter PARCEL ID		This should be left blank if no parcels are rented.
D3	Lan_boun	Is [PARCEL ID] inside the village boundary?	1 = Yes 2 = No		
D4	Lan_cent	Is [PARCEL ID] near the village center	1 = Yes 2 = No		
D5	Lan_home	Is [PARCEL ID] near your homestead?	1 = Yes 2 = No		
D6	Lan_size_i	What is the size of [PARCEL ID]?	Quantity	Unit	Record local units/quantity.
D7	Lan_dist_i	How long does it take to get from your house to [PARCEL ID] on foot?			Record in minutes.
D8	Land_diffcom_i	Is [PARCEL ID] in a different village from the one you live in?	1. Yes 2. No 3. Don't know		
D9	Land_diffcomvi_i	What is the name of the village where [PARCEL ID] is?	Enter village name		If Land_diffcom_i = 1 If 3 OR 4 >>> D13
D10	Lan_right_i	What is the ownership status of [PARCEL ID]?	<ol style="list-style-type: none"> <li>1. Owned <b>by the household</b></li> <li>2. Used <b>by the household</b> free of charge</li> <li>3. Rented <b>by the household</b></li> <li>4. Rented <b>by the household together with other people</b></li> </ol>		

			5. Owned by the household together with other people	
D11	Lan_othrent_i	Does someone else rent [PARCEL ID] from you?	1. Yes 2. No	
D12	Lan_doc_i	Do you or your household have any kind of documentation of your rights to [PARCEL ID]?	1. Yes 2. No 996. Don't know	If Lan_doc_i != 2 OR 996 skip to Lan_use_i (D13)
D12.1 D12.2	Lan_docparcel_i Lan_typedoc_i	Which parcels? What kind of documentation? SELECT ALL THAT APPLY.	Record Parcel IDs 1. GRANTED RIGHT OF OCCUPANCY 2. CERTIFICATE OF CUSTOMARY RIGHT OF OCCUPANCY (CCRO) 3. INHERITANCE LETTER 4. OTHER GOVERNMENT DOCUMENT 5. OTHER DOCUMENT OR LETTER (NON-GOVERNMENT/UNOFFICIAL)	
<del>D12.3</del>	<del>Lan_docobtain_i</del>	<del>What year did you obtain the documentation for [PARCEL ID]?</del>	Year	If land_doc_i=yes next question. 996 if unsure/don't know.
D12.4	Lan_docobtainmon_i	What month did you obtain the documentation for [PARCEL ID]?	Month	Enter 996 if unsure/don't know
<del>D12.5</del>	<del>Lan_docnum_i</del>	<del>How many people in household have their names listed on the documentation you have for [PARCEL ID]?</del>		Enter number; If don't know, enter 996
D12.6	Lan_docwho_i	Who in the household is listed as the primary land user on the documentation for [PARCEL ID]?	1. Husband 2. Wife 3. Jointly listed (husband/wife) 4. Other 996. Don't know	Refer to HH roster
D12.7	Lan_docphys_i	Do you have a personal copy of the document?	1 Yes 2 No	If lan_typedoc_i == 2 (ccro) If 2 >>> D12.9

D12.8	Lan_docloc_i	Where do you store a copy of the document?	<ol style="list-style-type: none"> <li>1. In homestead</li> <li>2. With a nearby family member</li> <li>3. At the village center</li> <li>4. At the DLO/With the government</li> </ol>	If lan_typedoc_i == 2 (ccro)
D12.9	Lan_docuse_i	Have you ever had to reference the document?	<ol style="list-style-type: none"> <li>1 Yes</li> <li>2 No</li> </ol>	If lan_typedoc_i == 2 (ccro) If 2 >>> D13
D12.10	Lan_docusetype_i	Why did you reference the document?	<ol style="list-style-type: none"> <li>1. To resolve a dispute</li> <li>2. To obtain a loan</li> <li>3. To plan inheritance</li> <li>4. To prove ownership (not dispute related)</li> <li>5. As part of a rental agreement</li> <li>990. Other</li> </ol>	Lan_docuse_i == yes
D13	Lan_use_i	During last year's agricultural seasons, did your household farm [PARCEL ID], leave it fallow, or use it for pasture or some other non-agricultural use?	<ol style="list-style-type: none"> <li>1 Farmed this parcel</li> <li>2 Left this parcel fallow</li> <li>3 Used this parcel as pasture/other non-agricultural use</li> </ol>	
D14	Lan_mth_i	What was the method by which [PARCEL ID] was acquired/claimed by your household?	<ol style="list-style-type: none"> <li>1) Bought it</li> <li>2) Inherited</li> <li>3) Started renting/sharecropping</li> <li>4) Cleared it</li> <li>5) Distributed by village</li> <li>6) Received as gift</li> <li>7) Occupied</li> </ol>	Context
D15	Lan_yr_i	What year did your household acquire [PARCEL ID]?		Enter 996 if don't know
D16	Lan_dcd_i	Who primarily decides how to use [PARCEL ID]?	<ol style="list-style-type: none"> <li>1= Self</li> <li>2=Spouse</li> <li>3=Both self and spouse together</li> <li>4=Other male household member</li> <li>5=Other female household member</li> <li>990=Other, specify</li> </ol>	
D17	Lan_inherp_i	Do you have an inheritance plan for your parcels?	<ol style="list-style-type: none"> <li>1 Yes</li> <li>2 No</li> </ol>	If no skip to lan_svy_i

D17.1	Lan_inhe_who_i	Have you discussed this plan with anyone?	1 Yes 2 No	If not skip to lan_svy_i
D17.2	Lan_inhe_name	Who have you discussed this with?	1 Wife 2 Children 3 Other Family 4 Village leaders 5 Other	
D18	Lan_svy_i	Has [PARCEL ID] ever been mapped by surveyor?	1 Yes 2 No 996 Don't know	If 2 OR 996 >>> D21
D19	Lan_yrsvy_i	What year was [PARCEL ID] mapped by surveyor?	Year	If lan_svy_i = yes 99 if unsure/don't know. Skip to next section unless land_use_i = 1
D20	Lan_mnsvy_i	What month was [PARCEL ID] mapped by surveyor?	Month	Enter 996 if don't know Enter 996 if don't know
D21	Lan_top_i	What is the topography of [PARCEL ID]?	1 Plain 2 Valley 3 Mountain top 4 Mountain side 5 Hill 6 Other	
D22	Lan_soiltyp_i	What is the primary soil type of [PARCEL ID]?	(1)Clay (2)Sandy (3)Loam (4)Other (996)Don't know	
D23	Lan_slp_i	Overall, what is the slope of [PARCEL ID]?	(1) Flat bottom (2) Flat top (3) Slightly sloped (4) Very Steep	
D24	Lan_irr_i	Is [PARCEL ID] irrigated?	1 Yes 2 No	
D25	Lan_restyn_i	Have you ever left [PARCEL ID] fallow?	1 Yes 2 No	If 2, skip to lan_imp_i
D25.1	Lan_rest_i	What was the most recent year in which [PARCEL ID] was left fallow?		Enter 996 if don't know;

D25.2	Lan_restperct_i	What portion of [PARCEL ID] was left fallow?	Enter percentage	Answer only if
D26	Lan_imp_i	For each of the following items I am going to ask about, I want to know if you have made any of the following improvements to this parcel, either in the past year or before that?		lan_restyn_i = 1 Need to tailor these may need to add more investments
D26.1	Lan_imp_well_i	<input type="checkbox"/> Digging wells or pump irrigation	1 In the past year 2 Before the past year 3 Both in the past year and before 4 No	
D26.2	Lan_imp_building_i	<input type="checkbox"/> Erecting buildings	1 In the past year 2 Before the past year 3 Both in the past year and before 4 No	
D26.3	Lan_imp_fence_i	Erecting fencing	1 In the past year 2 Before the past year 3 Both in the past year and before 4 No	
D26.4	Lan_imp_terr_i	<input type="checkbox"/> Terracing	1 In the past year 2 Before the past year 3 Both in the past year and before 4 No	
D26.5	Lan_imp_soil_i	<input type="checkbox"/> Soil conservation	1 In the past year 2 Before the past year 3 Both in the past year and before 4 No	

**E. Agricultural Production**
**E.1 Annual Crops**

	Name	Question	Response options/units	Notes/instructions
<i>Now, I am going to ask about some of the annual crops that you grow here.</i>				
E1	Ann_wet_i	Which parcels did anyone in your household cultivate during the last rainy season?	[SELECT FROM LIST OF PARCELS COLLECTED ABOVE SECTION]	996 for OTHER and specify 000 for none
E1.1	Ann_dry_i	Which parcels did anyone in your household cultivate during the last dry season?	[SELECT FROM LIST OF PARCELS COLLECTED FROM ABOVE SECTION]	996 for OTHER (specify) 000 for none
E1.2	Ann_difcrop_i	How many different crops did you grow on [PLOT ID]?	Enter number	
E1.3	Ann_croprain_i	What crops were grown on [PLOT ID] during last year's rainy season?		See crop codes at the end of this document.
E1.4	Ann_cropdry_i	What crops were grown on [PLOT ID] during last year's dry season?		See crop codes
E1.5	Ann_perc_i	What percentage of [PLOT ID] is used to grow [CROP]?		
E1.6	Ann_soil_i	What did you use to till the soil on [PLOT ID]? (Select all that apply)	1 Hand hoe 2 Animal-drawn plows 3 Tractors or other machinery	
E1.7	Ann_seed_i	What was the name of the main seed variety for this [CROP] on [PLOT ID]?	990 OTHER, specify	Enter name
E1.8	Ann_varseed_i	How many varieties of seed for this [CROP] were planted on [PLOT ID]?		Enter number
E1.9 E1.9.1	Ann_seed_quant_i Ann_seedamo_i	What was the total amount of seeds used on [PLOT ID]? What units were used for ann_seed_qaunt_i?	Enter number 1. KG 2. 1 LITER CUP 3. 10 LITER BUCKET 4. 20 LITER BUCKET 5. SMALL CUP (handful) 6. OTHER, SPECIFY	
E1.10	Ann_seedcert_i	Did you receive a voucher/certificate for any of this [SEED]?		
E1.11	Ann_numseed_i	What was the total amount paid for seeds (Tsh)?	1. Fertilizer	
E1.12	Ann_intype_i	What type of input did you utilize during [season] on [PLOT ID] SELECT MULTIPLE	2. Pesticide 3. Herbicide	

	Name	Question	Response options/ <u>units</u>		Notes/instructions
			4. Fungicide 5. Other 6. None		
EI.13	Ann_fert_i	What type of fertilizer did you use on [PLOT ID]?	1. Di-ammoium Phosphate (DAP) 2. UREA 3. Triple Super Phosphate (TSP) 4. Calcium Ammonium Nitrate (CAN) 5. Sulphate of Ammonium (SA) 6. Nitrogen Phosphate Potassium (NPK) 7. Minjingu Rock Phosphate (MRP) 8. Organic Fertilizer 9. Other 10. 999 N/A		Answer if EI.122==1 This should only show up if ann_intype_i includes Fertilizer
EI.14	Ann_inputkg_i	In total, what quantity of [INPUT] was used for your crops during [season] on all parcels?	Quantity	Units: 1. KG 2. 1 LITER CUP 3. 10 LITER BUCKET 4. 20 LITER BUCKET 5. SMALL CUP (handful) 6. OTHER, SPECIFY	For overall plots.
EI.15	Ann_inputcost_i	In total, how much did you pay for the [INPUT] during [season]?	TZ shillings		
EI.16	Ann_rent_i	In the [season] did you rent farm equipment (tractors, combine, plough, bullock etc)?	1 Yes 2 No		If 2 >>> EI.18
EI.17	Ann_rentpay_i	In total, how much did you pay for the rented farm equipment during [season]?	TZ shillings		

Enter quantity

	Name	Question	Response options/units	Notes/instructions
EI.18	Ann_irr_i	In [season], did your household spend money on irrigation (including electricity, diesel, pump set rental, maintenance, repair of irrigation channels etc.) for all/any crops?	1 Yes 2 No	If 2 >>> EI.20
EI.19 EI.20	Ann_irrcost_i Ann_labyn_i	In total, how much did you spend on irrigation during [season]? Did you use hired labor during [season]?	TZ shillings 1 Yes 2 No	
EI.20.1	Ann_labor_i	In total, how much did you spend on hired farm labor during [season]?	TZ shillings	
EI.21	Ann_laborday_i	Beyond the household labor and other hired labor already discussed, approximately how many days of shared/cooperative/community labor were used in total for all crops during [season]?		Days would be full working days, i.e. during day light hours.
EI.22	Ann_harv_i	During [season] how much [CROP] did your household harvest in total across all plots of land?		
EI.22.1	Ann_harv_i	What units were used to record harvest for ann_harv_i?	Record quantity : 1. KG 2. Large Bag (100 KG) 3. Small Bag (50 KG) 4. 20 Liter Bucket 5. 10 Liter Bucket 6. Crate 7. Other (Specify)	if KG used, skip to Ann_cons_i
EI.23	Ann_harvkg_i	During [season] how much [CROP] in KG did your household harvest in total across all plots of land?	Record in KG if Ann_harv_i not reported in KG	
EI.25 EI.25.1	Ann_consquant_i Ann_consunit_i	What quantity of the [CROP] harvested during [season] has been consumed by members of your household? What units were used to record ann_conskg_i	1. 2. Enter quantity 1. KG 2. Large Bag (100 KG) 3. Small Bag (50 KG) 4. 20 Liter Bucket 5. 10 Liter Bucket 6. Crate 7. Other (Specify)	
EI.26	Ann_soldquant_i	What quantity of [CROP] harvested during [season] was sold at the marketplace (to any outlet)?	Enter quantity	

EI.26.1	Ann_sold_i	What units were used to record ann_soldquant_i?	<ol style="list-style-type: none"><li>1. KG</li><li>2. Large Bag (100 KG)</li><li>3. Small Bag (50 KG)  </li></ol>
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	Name	Question	Response options/units	Notes/instructions
			4. 20 Liter Bucket 5. 10 Liter Bucket 6. Crate 7. Cart 8. Other (Specify)	
E1.27	Ann_soldkg_i	What quantity of the [CROP] harvested during [season] was sold at the marketplace (to any outlet) in KG?	Record in KG TZ Shillings	
E1.28	Ann_earn_i	How much did you receive in total for [CROP] sold at the marketplace (to an agribusiness center or any other outlet)?		

<b>E.2 Perennial Crops</b>				
	Name	Question	Response options/units	Notes/instructions
E2.1	Pere_crop_num	Thank you. Now, I want to ask you about perennial crops that you grow. How many different fruit trees and permanent crops do you grow on [PLOT ID]?	Enter number	
E2.1.1	Pere_crops	Please tell me all of the fruit trees and permanent crops that you grow on [PLOT ID]		List all fruit trees and permanent crops. These questions are asked for each fruit and permanent crop. Type=Fruit or Permanent Crop
E2.1.2	Pere_cropcount	How many of these plants/trees are on [PLOT ID]?		
E2.1.3	Pere_yearplant	When were most of these [CROP] planted on [PLOT ID]?	Month/Year	
E2.1.4	Pere_plants	How many trees/plants were planted on [PLOT ID] during the last 12 months?	#	
E2.6	Pere_trees	In the past 12 months, how many non-fruit trees did you plant on any of your plots?	#	
E2.6.1	Pere_treeuse	What do you plan to use these trees for?	1. Wood 2. Timber/Lumber 3. Erosion control 4. Border demarcation 990.Other	If Pere_trees is not 0, if Other record response
E2.7	Pere_intercrop	Was cultivation intercropped during the past long rainy season?	1 Yes 2 No	Skip to pere_prod_i if No
E2.7.1	Pere_interseason	What was the reason for intercropping?	1 More fertile for the soil 2 Substitute if either crop fails 3 To get the most out of my land	

	Name	Question	Response options/units	Notes/instructions
			4 Other	
E2.8	Pere_prod_i	What was the last harvest for the [CROP]?	Month/year	
E2.9	Pere_dec_i	Who in the household made the decisions concerning the use of [CROP] harvested in the past 12 months?	Select from list	
E2.10 E2.101	Pere_amount_i Pere_amountunit_i	What was the total amount of [CROP] harvested in the past 12 months? What units were used to record the amount in pere_amount_i?	Enter quantity 1. KG 2. Large Bag (100 KG) 3. Small Bag (50 KG) 4. 20 Liter Bucket 5. 10 Liter Bucket 6. Crate	
E2.11	Pere_sell_i	Did you sell any of the [CROP] collected?	7. Other (Specify) 1 Yes	
			2 No	
E2.11.1 E2.11.12	Pere_quant_i Pere_quantunit_i	What was the total quantity sold? What units were used to record the amount in pere_quant_i	Enter quantity 1. KG 2. Large Bag (100 KG) 3. Small Bag (50 KG) 4. 20 Liter Bucket 5. 10 Liter Bucket 6. Crate	If 2 >>> Next Section.
			990. Other (Specify)	
E2.11.2	Pere_value_i	What was the total value of [CROP] sold?	TZ Shillings	
E2.11.3	Pere_nego_i	Who in your household was responsible for negotiating the sale of the [CROP]?	Answer type/code	
E2.11.4 E2.11.5	Pere_earnuse_i Pere_locsell_i	Who in your household decided what to do with these earnings? Where did you sell most of the [CROP]?	Answer type/code Select all that apply: 1 purchased wholesale by a middleman 2 purchased wholesale by a processor 3 sold in the market directly 4 sold to a neighbor 5 Other	

Crops Codes

<b>Cereals/tubers/roots:</b> Maize.....11 Paddy.....12	<b>Fruits:</b> Passion Fruit....70 Banana.....71	<b>Vegetables:</b> Cabbage.....86 Tomatoes.....87	<b>Cash Crops:</b> Cotton.....50 Tobacco.....51	<b>Permanent Cash crops:</b> Sisal.....53
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Sorghum.....13	Avocado.....72	Spinach.....88	Pyrethrum.....52	Coffee.....54
Bulrush Millet...14	Mango.....73	Carrot.....89	Jute.....62	Tea.....55
Finger Millet....15	Papaw.....74	Chilies.....90	Seaweed.....19	Cocoa.....56
Wheat.....16	Orange.....76	Amaranths.....91		Rubber.....57
Barley.....17	Grapefruit.....77	Pumpkins.....92		Wattle.....58
Cassava.....21	Grapes.....78	Cucumber.....93		Kapok.....59
Sweet Potatoes...22	Mandarin.....79	Egg Plant.....94		sugar Cane.....60
Irish potatoes...23	Guava.....80	Water Mellon.....95		Cardamom .....61
Yams.....24	Plums.....81	Cauliflower.....96		Tamarind.....63
Cocoyams.....25	Apples.....82	Okra.....100		Cinnamon.....64
Onions.....26	Pears.....83	Fiwi.....101		Nutmeg.....65
Ginger.....27	Peaches.....84			Clove.....66
<b>Legumes, Oil &amp; fruit:</b>	Lime.....85			Black Pepper.....18
Beans.....31	Lemon.....852			Pigeon pea.....34
Cowpeas.....32	Pomelo.....68			Cassava.....21
Green gram.....33	Jack fruit.....69			Pineapple.....75
Chick peas.....35	Durian.....97			Palm Oil.....44
Bambara nuts.....36	Bilimbi.....98			Coconut.....45
Field peas.....37	Rambutan.....99			Cashew nut.....46
Sunflower.....41	Bread fruit.....67			Green Tomato.....300
Sesame.....42	Malay apple.....38			Monkeybread.....301
Groundnut.....43	Star fruit.....39			Bamboo.....302
Soyabans.....47	Custard Apple....200			Firewood/fodder..303
Caster seed.....48	God Fruit.....201			Timber.....304
	Mitobo.....202			Medicinal plant..305
	Plum.....203			"Fence tree".....306
	Peaches.....204			other.....990
	Pomegranate.....205			
	Date.....210			
	Tungamaa.....211			
	Vanilla.....212			

### F. Perceptions of land rights

	Name	Question	Response options/units	Notes/instructions
		Ok. I would like to ask you about some issues around land in this village. I only want to talk about parcels here (in this village), not things you may have heard in nearby villages (or plots you may have elsewhere).		Leave out mention of parcels in other villages if it is not relevant.
F1	Per_takepos	In the next five years, do you think it's possible that someone could try to take one of your parcels from you without your permission?	1 Yes 2 No 996Don't know	If 2 OR 996 >>> F6
F2	Per_expro	How likely do think it is that someone would try to take one of your parcels from you in the next 5 years?	1 Possible but unlikely 2 Somewhat likely 3 Very likely/it is happening now	If per_takepos = yes
F3	Per_parcel_i	Which parcels do you feel are at risk?	Run through list of parcels	If per_expro != 1
F4	Per_source_i	Who do you think would try to take your parcels?	1. Government 2. Foreign investor 3. Tanzanian investor (from outside the village) 4. Someone inside the village 5. Absentee owner/land claimants 6. Extended family 7. Other	If per_expro != 1
F5	Per_reason	Which if any of the following are reasons why you think this could happen? Please rank from the most important reason to the least important reason 1. Ongoing or past disputes or expropriation 2. Lack of documents 3. Length of agreement (if lease agreement for example) 4. Problems experienced by others in the community	Enter rank order. If one or more options are not relevant, ask for top rank and then determine which seem the least irrelevant of the	If per_takepos = yes

			irrelevant options and work from there.	
F6	Per_changepos	Compared to one year ago, do you think the possibility that someone could try to take one of your parcels has increased, decreased, or stayed the same?	1 Increased 2 Decreased 3 Stayed the same	
F7	Per_comworry	In general, how many people in your community are worried that someone might try to take their land against their will?	1 None or very few 2 Some are worried but most are not 3 Most are worried but not all 4 All or nearly all are worried	
F8	Per_borpos	Do you think it's possible that you could have a dispute over the borders of one of your parcels with a neighbor in the next 5 years?	1 Yes 2 No	If 2 >>>> F10
F9	Per_disputeprob	How likely do think it is that you could have a dispute over the borders of one of your parcels with a neighbor in the next 5 years?	1 Possible, but unlikely 2 Somewhat likely 3 Very likely/it is happening now	If per_borpos = yes
F10	Per_reasonwhy	Which if any of the following are reasons why you don't think this is possible? <input type="checkbox"/> My family has owned/used the parcel for a long time <input type="checkbox"/> Lack of problems in the past <input type="checkbox"/> Land has been surveyed <input type="checkbox"/> HH has documentation of rights <input type="checkbox"/> Village Council/Elders/Leaders can easily address potential disputes	Select all that apply.	If per_takepos = no
F11	Per_dispute_change	Compared to one year ago, do you think the possibility that you could have a boundary dispute with your neighbors has increased, decreased, or stayed the same?	1 Increased 2 Decreased 3 Stayed the same	
F12	Per_dispute_type_i	Over the past 5 years, how big of a problem have each of the following types of disputes about land been in your community? <input type="checkbox"/> Family disputes <input type="checkbox"/> Disputes with investors <input type="checkbox"/> Disputes with others (non-family) claiming land <input type="checkbox"/> Boundary disputes between neighbors <input type="checkbox"/> Disputes about land rentals/sharecropping agreements <input type="checkbox"/> Disputes over grazing	1 Not a problem at all 2 A small problem 3 A big problem	Ask for each kind of dispute

F13	Per_prob_change	Over the past year, would you say problems with land disputes have improved, stayed the same, or gotten worse?	1 Improved 2 Stayed the same 3 Gotten worse	
F14	Per_future	In the next 12 months, do you expect problems with land disputes will improve, stay the same, or get worse?	1 Improved 2 Stayed the same 3 Gotten worse	
F15	Per_coma	Do you use communal pasture land?	1 Yes 2 No	If 2 >>> F17
F16	Per_coml	Do you think it is possible that you will lose your existing rights on communal pasture land in the next 12 months?	1 Yes 2 No	Anser if per_coma=Yes If 2 OR 996 >>> F17
F16.1	Per_coml_why	How likely do you think it is that you would lose your existing rights on communal pasture land in the next 12 months	996Don't know 1 Highly likely 2 Somewhat likely 3 Possible but unlikely	If per_coml = Yes
F16.2	Per_comr	Why do you think you will lose your existing rights on communal pasture land in the future?	1= Local farmers encroaching onto communal land or access routes. 2= Village will decide to allocate the land for other uses. 3= The government will allocate the communal land to an investor 990= Other (please specify)	Answer if per_coml=Yes
			1 Very high risk 2 Somewhat risky 3	
F17	Per_fallow	How much of a risk is there that someone will take over one of your plots if you leave it fallow?	No risk 4 Unsure	
F18	Per_inheritforce	In general, do you feel that your plans for land inheritance will be enforced?	1 Yes 2 No 996Don't know/unsure	
F19	Per_landlaw	How well do you understand the official land laws?	1 Very well 2 Familiar but don't know the details 3	

			Familiar with some rules but don't know if they are official law 4 Unsure	
F20	Per_CCRO	Have you heard of CCROs?	1 Yes 2 No	If 2 >>>Per_LTA. DO NOT PROMPT IF RESPONDENT HAS NOT HEARD OF CCROs.
F20.1	Per_payCCRO	In general, how much (if anything) would you be willing to pay to have one of your parcels surveyed and to receive a CCRO?		
F21	Per_LTA	Have you heard of LTA?	1 Yes 2 No	If 2 >>> Next section. DO NOT PROMPT IF RESPONDENT HAS NOT HEARD OF LTA!
F21.1	Per_LTAvisit	Did LTA visit your parcel in the past 2 years?	1 Yes 2 No	If 2 >>> Next section
F21.2	Per_LTArec	Which of the following did you receive through LTA?  MARK ALL THAT APPLY	<input type="checkbox"/> Land was surveyed <input type="checkbox"/> CCRO <input type="checkbox"/> Notarized title <input type="checkbox"/> None of the above	If Per_LTAvisit= yes
F21.3	Per_LTAtime	When did LTA visit your parcel?	Month/Year	If Per_LTAvisit = yes
F21.4	Per_LTAmap	When did [Per_LTArec response] take place?	Month/Year	Based on Per_LTArec
F21.5	Per_LTAprocess	How long did the LTA process take?	Enter days	
F21.6	Per_LTAprob	Did you encounter any issues during the LTA process	1 Yes 2 No	If per_LTAvisit = yes If 2 >>> F21.8
F21.7	Per_LTAprodtype	What kind of issues did you encounter?	1. Issue related to existing land dispute 2. Issue related to new dispute caused by mapping 3. Missed deadline 4. Other	If Per_LTAprob = yes

F21.8	Per_CCRO	How much time passed between mapping and receipt of your CCRO?	Enter months	If per_LTArec = CCRO
F21.9	Per_LTAimpr	What was your impression of LTA?	1 Very positive 2 Somewhat positive 3 Neutral 4 Somewhat negative 5 Very negative	If Per_LTA = yes
F21.10	Per_docyben	Do you believe that having documentation of your land rights through LTA benefits your household?	1 Yes 2 No	
F21.11	Per_LTAcom	What are the benefits to LTA in your village?  ALL THAT APPLY	996 Don't know <input type="checkbox"/> Protects against losing land <input type="checkbox"/> Protects against disputes with neighbors <input type="checkbox"/> Makes it easier to rent out <input type="checkbox"/> Makes it easier to sell <input type="checkbox"/> Will make inheritance easier <input type="checkbox"/> Other	If per_docyben = yes

**G. Land disputes**

	Name	Question	Response options/units	Notes/instructions
<b><i>This next line of questioning addresses disputes around land in the village. As a reminder, we are not going to share your responses with anyone else in the village or to anyone in the government. Your responses will not affect whether this village receives services or not. We just want to learn more about disputes here.</i></b>				
G1	Dis_dis	In the past year, has anyone in your household been involved in any dispute or argument about land- for example, about who owns or has rights to a parcel, boundaries of parcels, or inheritance of land?	1 Yes 2 No	If 2 >>> Next section
G1.1 G1.2	Dis_disnum Dis_mem_j	How many disputes? Which household member had [DISPUTE ID]? SELECT ALL RELEVANT HH MEMBERS.	# All hh members > 15, include "the whole household" as an option	Repeat questions indexed_j for each of j disputes
G1.3	Dis_own_j	Does the household currently use the parcel over which [DISPUTE ID] occurred?	1 Yes 2 No	
G1.4	Dis_nme_j	What is the name of the parcel on which [DISPUTE ID] occurred? SELECT ALL THAT APPLY.	Parcel names from section D	If yes to previous
G1.5	Dis_type_j	What was [DISPUTE ID] related to? Select all that apply.	1 Land that the household owned or was using 2 The household trying to acquire new land 3 Land rented from the household 4 Land rented by the household 5 Inheritance 6 Grazing 7 Other	If 1 >>> G1.6 2 >>> G1.7 3 >>> G1.8 4 >>> G1.9 5 >>> G1.10 6 >>> G1.11
G1.6	Dis_desct1_j	Which of the following best describes [DISPUTE ID]?	1 Someone who lives in the area tried to take the household's land 2 Someone from outside the area tried to take the household's land 3 Boundary dispute with neighbor 4 Government tried to take the land or stop the household from using it	If dis_type_j = 1
G1.7	Dis_desct2_j	Which of the following best describes [DISPUTE ID]?	1 The household bought/claimed/requested some new land, but someone else claimed to be the owner 2 The household did not buy the land but wanted land that someone else was using	If dis_type_j = 2

			3 None of the above	
G1.8	Dis_desc3_j	Which of the following best describes [DISPUTE ID]?	1 Payment of rent/crops 2 Length of rental agreement 3 Renter tried to claim ownership 4 Other	If dis_type_j = 3
G1.9	Dis_desc4_j	Which of the following best describes [DISPUTE ID]?	1 Payment of rent/crops 2 Length of rental agreement 3 Disagreement over ownership 4 Other	If dis_type_j = 4
G1.10	Dis_desc5_j	Which of the following best describes [DISPUTE ID]?	1 Disagreement with brothers/sisters over parents' land 2 Widow/widower whose land is being claimed by spouse's relatives 3 Other	If dis_type_j = 5 Need to tailor this one
G1.11	Dis_desc6_j	Which of the following best describes [DISPUTE ID]?	1 Disagreement with pastoralists over grazing on land 2 Disagreement with non-pastoralists from the village over grazing on land 3 Disagreement with non-pastoralists from outside the village over grazing on land 3 Other	If dis_type_i=6
G2	Dis_desc7_i	Describe [DISPUTE ID]	Write response	If dis_type_i= 7
G3	Dis_yr_j	In what year did [DISPUTE ID] begin?		
G4		How long did [DISPUTE ID] last?	Months	
G5	Dis_serious_j	Overall, how serious was [DISPUTE ID]?	1 Very serious 2 Somewhat serious 3 Not serious	Guidance: "serious" here means that it disrupted or altered normal life activities.
G6	Dis_mny_j	Did you lose money because of [DISPUTE ID]?	1 Yes, a little (less than TZS 10,000) 2 Yes, a lot (more than TZS 10,000) 3 No	
G7	Dis_safe_j	Did [DISPUTE ID] make you worried about your safety?	1 Yes, a lot 2 Yes, a little 3 No	
G8	Dis_resolved_j	Was [DISPUTE ID] resolved?	1 Yes 2 No	If 2 >>> G9

G8.1	Dis_who_resolved_j	Who resolved [DISPUTE ID]?	1 We resolved it amongst ourselves 2 Others in the community 3 The Village Council 4 District Courts 5 District Officials 6 Village land use committee 7 Ward land use committee 8 Other	If yes to dis_resolved_j Need to tailor
G8.2	Dis_satis_j	How satisfied were you with how [DISPUTE ID] was resolved?	1 Very satisfied 2 Somewhat satisfied 3 Not satisfied	If yes to
G9		How likely is it that you will have another dispute like [DISPUTE ID]?	1 Very likely 2 Somewhat likely 3 Not likely 4 Unsure	dis_resolved_j

<b>H. Non-Agricultural Income, Consumption, and Assets</b>				
	<b>Name</b>	<b>Question</b>	<b>Response options/units</b>	<b>Notes/instructions</b>
H1	Inc_own	Does your household currently own any of the following items in good working condition: [READ EACH OPTION OUT LOUD AND MARK IF ANSWER "YES" or "NO"]		
H1.1	Inc_own_radio		1 Yes	
H1.2	Inc_own_mobile	<input type="checkbox"/> Radio or Radio Cassette	2 No	
H1.3	Inc_own_sewm		1 Yes	
H1.4	Inc_own_tv	<input type="checkbox"/> Telephone(mobile)	2 No	
H1.5	Inc_own_dvd		1 Yes	
H1.6	Inc_own_lanterns	<input type="checkbox"/> Sewing Machine	2 No	
H1.7	Inc_own_otherstove		1 Yes	
H1.8	Inc_own_bicycle	<input type="checkbox"/> Television	2 No	
H1.9	Inc_own_watches		1 Yes	
H1.10	Inc_own_mnets	<input type="checkbox"/> Video / DVD	2 No	
		<input type="checkbox"/> Lanterns	2 No	
			1 Yes	
		<input type="checkbox"/> Stove	2 No	
			1 Yes	
		<input type="checkbox"/> Bicycle	2 No	
			1 Yes	
		<input type="checkbox"/> Watches	2 No	
			1 Yes	
		<input type="checkbox"/> Mosquito net	2 No	

HI.11 HI.12	Inc_own_iron Inc_own_fanair	<input type="checkbox"/> Iron (Charcoal or electric)	1 Yes 2 No	
HI.13 HI.14	Inc_own_fields Inc_own_solar	<input type="checkbox"/> Fan/Air conditioner	1 Yes 2 No	
HI.15 HI.16	Inc_own_house Inc_own_poultry	<input type="checkbox"/> Fields/Land	1 Yes 2 No	
HI.17	Inc_own_livestock	<input type="checkbox"/> Solar panel	1 Yes 2 No	
		<input type="checkbox"/> Houses/housing addition	1 Yes 2 No	
		<input type="checkbox"/> Poultry	1 Yes 2 No	
		<input type="checkbox"/> Livestock	1 Yes 2 No	
HI.18	Inc_own_other	<input type="checkbox"/> Other	1 Yes	
HI.11	Inc_own_radio_num		2 No Quantity	If Inc_own_radio =
HI.21 HI.31	Inc_own_mobile_num Inc_own_sewm_num	<input type="checkbox"/> Radio or Radio Cassette	Quantity	yes If inc_own_mobile =
		<input type="checkbox"/> Telephone(mobile)	Quantity	yes If own_sewm_num =
		<input type="checkbox"/> Sewing Machine		yes
HI.41 HI.51	Inc_own_tv_num Inc_own_dvd_num	<input type="checkbox"/> Television <input type="checkbox"/> Video / DVD	Quantity Quantity	If inc_own_tv = yes If inc_own_dvd = yes
HI.61 HI.71	Inc_own_lanterns_num Inc_own_stove_num	<input type="checkbox"/> Lanterns	Quantity	If inc_own_lanterns=yes
HI.81 HI.91	Inc_own_bicycle_num Inc_own_watches_num	<input type="checkbox"/> Stove	Quantity	If inc_own_stove = yes
HI.101	Inc_own_mnets_num	<input type="checkbox"/> Bicycle	Quantity	If inc_own_bicycle = yes
		<input type="checkbox"/> Watches	Quantity	If inc_own_watches = yes
		<input type="checkbox"/> Mosquito net	Quantity	If inc_own_mnets = yes
HI.111 HI.121	Inc_own_iron_num Inc_own_fanair_num	<input type="checkbox"/> Iron (Charcoal or electric) <input type="checkbox"/> Fan/Air conditioner	Quantity <input type="checkbox"/> Fields/Land	If inc_own_iron = yes
HI.131	Inc_own_fields_num			

Quantity  
inc\_own\_fanfair =

If  
y  
e  
s

Quantity  
inc\_own\_fields =

If  
y  
e  
s

H1.141 H1.151	Inc_own_solar_num Inc_own_house_num	<input type="checkbox"/> Solar panel	Quantity	If inc_own_solar = yes
H1.161 H1.171	Inc_own_poultry_num Inc_own_livestock_num	<input type="checkbox"/> Houses/housing addition	Quantity	If inc_own_house = yes
H1.181 H2	Inc_own_other_num Inc_own_ani	<input type="checkbox"/> Poultry	Quantity	If inc_own_poultry = yes
		<input type="checkbox"/> Livestock	Quantity	If inc_own_livestock= yes
		<input type="checkbox"/> Other	Quantity by specified item	If inc_own_other = yes
		Which of the following animals are owned by the household?	<ol style="list-style-type: none"> <li>1. Cows, oxens and bulls</li> <li>2. Horses, donkeys and mules</li> <li>3. Pigs</li> <li>4. Goats</li> <li>5. Sheep</li> <li>6. Poultry</li> <li>7. Other</li> <li>8. None</li> </ol>	
H3	Inc_hwalls	What is the major construction material of the walls of the main dwelling?	<ol style="list-style-type: none"> <li>1. POLES (INCLUDING BAMBOO), BRANCHES, GRASS)</li> <li>2. POLES AND MUD/MUD AND STONES</li> <li>3. MUD ONLY</li> <li>4. MUD BRICKS</li> <li>5. BAKED/BURNT BRICKS</li> <li>6. CONCRETE, CEMENT, STONES</li> <li>990. OTHER, SPECIFY</li> <li>1. GRASS, LEAVES, BAMBOO</li> <li>2. MUD AND GRASS</li> <li>3. CONCRETE, CEMENT</li> </ol>	Enumerator should directly observe to confirm response.
H4	Inc_hroof	What is the major construction material of the main roof?	<ol style="list-style-type: none"> <li>1. GRASS, LEAVES, BAMBOO</li> <li>2. MUD AND GRASS</li> <li>3. CONCRETE, CEMENT</li> </ol>	

			4. METAL SHEETS (GCI) 5. ASBESTOS SHEETS 6. TILES 7. OTHER, SPECIFY 1 Yes 2 No	
H5	Inc_act_n	Other than working on the household plots, did [NAME] do anything else to earn money including work for pay, work in business for (him/herself), work in a family business, making things to sell, casual labor, odd jobs, or any other activity to earn money, during the last 12 months?		Ask for each hh member older than 15 If 2 >>> H6
H5.1	Inc_jobtype_n	In this work, was [NAME] working for:	1. Work for non-household member/ firm/ company 2. "non-farm on own account/ household enterprise"	If Inc_act_n== Yes
H5.2	Inc_occtype_n	What activity did [NAME] do?	3. Farm owned or rented by household member 1. FISHING 2. MINING 3. TOURISM 4. GOVERNMENT OFFICE 5. PARASTATAL 6. PRIVATE SECTOR 7. NGO / RELIGIOUS 8. SELF-EMPLOYED (NOT AGRICULTURE): WITH EMPLOYEES 9. SELF-EMPLOYED (NOT AGRICULTURE): W/OUT EMPLOYEES	

			10. UNPAID HOUSEHOLD LABOUR	
			Enter months	
H5.3	Inc_months	During the last 12 months, for how many months did [NAME] work in their job?	Enter hours	
H5.4	Inc_hours	During the last 12 months, how many hours did [NAME] usually work in this job each day?		
H5.5	Inc_paid	Was [NAME] being paid in this job?	1 Yes 2 No	
H5.5.1	Inc_period_n	How much was [NAME] being paid?	<b>Amount (TZS)</b> <b>Period of payment</b> 1 Month 2 Fortnight 3 Week 4 Day 5 Other	
H6	Inc_inc	For each of the following, can you tell me if anyone in your household earned income from this source in the past 12 months?	1 Yes 2 No	
		READ EACH OPTION OUT LOUD AND MARK IF ANSWER IS "YES"		
H6.1	Inc_inc_wage	<input type="checkbox"/> Wage and/or self-employment income	1 Yes 2 No	
H6.2	Inc_inc_rent	<input type="checkbox"/> Rental of land / property	1 Yes 2 No	
H6.3	Inc_inc equip	<input type="checkbox"/> Rental of farm equipment / animals	1 Yes 2 No	
H6.4	Inc_inc_saleanim	<input type="checkbox"/> Sale of livestock	1 Yes 2 No	
H6.5	Inc_inc_animprod	<input type="checkbox"/> Revenue from livestock products	1 Yes 2 No	
H6.6	Inc_inc_asset	<input type="checkbox"/> Sale of household assets	1 Yes 2 No	



H6.9	Inc_inc_pension	<input type="checkbox"/> Private pensions or other retirement payments	1 Yes 2 No	
H6.10	Inc_inc_govt	<input type="checkbox"/> Social assistance payments from the government (i.e., scholarships, disability payments, etc.)	1 Yes 2 No	
H6.11	Inc_inc_ngo	<input type="checkbox"/> Social assistance from aid programs, churches, NGOs, or other organizations	1 Yes 2 No	
H7	Inc_earn	For each of the following YES responses in H6, can you tell me how much anyone in your household earned from this source?	Amount in TZS	
H7.1	Inc_earn_wage	<input type="checkbox"/> Wage and/or self-employment income		If H6.1 == 1
H7.2	Inc_earn_rent	<input type="checkbox"/> Rental of land / property		If H6.2 == 1
H7.3	Inc_earn equip	<input type="checkbox"/> Rental of farm equipment / animals		If H6.3 == 1
H7.4	Inc_earn_saleanim	<input type="checkbox"/> Sale of livestock		If H6.4 == 1
H7.5	Inc_earn_animprod	<input type="checkbox"/> Revenue from livestock products		If H6.5 == 1
H7.6	Inc_earn_asset	<input type="checkbox"/> Sale of household assets		If H6.6 == 1
H7.7	Inc_earn_remit	<input type="checkbox"/> Remittances from family outside the household, friends or others		If H6.7 == 1
H7.8	Inc_earn_ssmit	<input type="checkbox"/> Social Security National Insurance Trust, or SSNIT		If H6.8 == 1
H7.9	Inc_earn_pension	<input type="checkbox"/> Private pensions or other retirement payments		If H6.9 == 1
H7.10	Inc_earn_govt	<input type="checkbox"/> Social assistance payments from the government (i.e., scholarships, disability payments, etc.)		If H6.10 == 1
H7.11	Inc_earn_ngo	<input type="checkbox"/> Social assistance from aid programs, churches, NGOs, or other organizations		If H6.11 == 1

**I. Household Savings, Borrowing, and Shocks**

	Name	Question	Response options/units	Notes/instructions
<i>Thank you. I would like to ask a few questions now about how your household manages expenses.</i>				
11	Fin_credsource	In the past six months, has anyone in your household borrowed money?	1 Yes 2 No	If 2 >>> 13
11.1	Fin_credfrom	Who did they borrow from?	1. COMMERCIAL BANKS 2. MICRO-FINANCE INST 3. VILLAGE COMMUNITY BANK (VICOBA) 4. NEIGHBOURS / FRIENDS 5. FAMILY 6. NGO OR SELF-HELP GROUPS 7. OTHER INFORMAL MONEY LENDER 8. OTHER, SPECIFY	If fin_credsource = yes
12	Fin_amtbrw	In total, approximately how much has your household borrowed in the past 1.5 years?	TZ shillings	If yes to "has your household borrowed"
13	Fin_wntloan	If you wanted to get a loan of to cover your expenses or buy farm inputs, do you think you or anyone in your household would be able to do that?	1 Yes 2 No 996 Don't know	
14	Fin_bankacct	Do you or anyone else in your household have a bank account, either with a commercial bank, a credit union, or other similar institution?	1 Yes 2 No 996 Don't know	If yes or maybe to previous If 2 OR 996 >>> 16
15	Fin_bankname	Please list up to 3 institutions with whom you or a member of your household has a savings account.	Enter name 998 Can't recall / remember	If Fin_bankacct = yes If 998 >>> 16
15.1	Fin_bankyear	What year did you open the account?	Enter year 998 if can't recall	If Fin_bankacct=yes
15.2	Fin_bankmonth	What month did you open the account?	Enter month 998 Can't recall / remember	If Fin_bankacct = yes

n\_shock Did your household experience any unusual problems during the past year that affected your HH's ability to eat or changed what your household owned?

1 Yes  
2 No  
996 Don't know

If 2 OR 996, skip to next section.

17	Fin_typshock	Please select the first and second events that had the biggest impact on your household in the past 12 months.	1 DROUGHT/BAD RAINFALL 2 FLOODS 3 LANDSLIDES & MUDSLIDES 4 CROP PESTS & DISEASE 5 LIVESTOCK DISEASES 6 HIGH COST OF SEED, FERTILIZER 7 JOB LOSS FOR A HH MEMBER 8 SERIOUS ILLNESS, ACCIDENT, OR DEATH OF HH MEMBER 9 INSECURITY/VIOLENCE 990OTHER, SPECIFY	If yes to previous Select top two.
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<b>J. Food Security</b>				
	<b>Name</b>	<b>Question</b>	<b>Response options/units</b>	<b>Notes/instructions</b>
<i>In this next set of questions, I want to ask about your food situation. Thank you.</i>				
J1	Fd_season	In the last 12 months, have you been faced with a situation when you did not have enough food to feed the household?	1 Yes 2 No	If 2 >>> J2
J1.1	Fd_seasonday	For how long did you face this situation?	Enter days.	
J2	Fd_worry	During the past 12 months, did you worry that your household would not have enough food? _____	0 No (it did not happen) 1 Rarely (once or twice) 2 Sometimes (three to ten times) 3 Often (more than 10 times)	
J3	Fd_kinds	During the past 12 months, did it happen that you or someone in your household were not able to eat the <u>kinds of foods you</u> would have preferred to eat because of lack of resources?	0 No (it did not happen) 1 Rarely (once or twice) 2 Sometimes (three to ten times) 3 Often (more than 10 times)	(Note emphasis on KINDS of foods)
J4	Fd_fewml	During the past 12 months, did it happen that you or any other household member had to eat <u>fewer meals in a day</u> because there was not enough food?	0 No (it did not happen) 1 Rarely (once or twice) 2 Sometimes (three to ten times) 3 Often (more than 10 times)	
J5	Fd_nofood	During the past 12 months, did it happen that there was <u>no food to eat of any kind</u> in your house, because of lack of resources to get food?	0 No (it did not happen) 1 Rarely (once or twice) 2 Sometimes (three to ten times) 3 Often (more than 10 times)	

	Fd_bed	During the past 12 months, did it happen that you or any household member <u>went to sleep at night hungry</u> because there was not enough food?	0 No (it did not happen) 1 Rarely (once or twice) 2 Sometimes (three to ten times) 3 Often (more than 10 times)	
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**K. Self Efficacy**

	Name	Question	Response options/units	Notes/instructions
<i>Thank you. Now I am going to read out some statements to you; please tell me how true each of the statements is about you.</i>				
K1	Eff_solve	I can always manage to solve my problems if I try hard enough	1 not at all true;2 hardly true;3 moderately true;4 exactly true	
K2	Eff_opp	If someone opposes me, I can find the means and ways to get what I want	1 not at all true;2 hardly true;3 moderately true;4 exactly true	
K3	Eff_acco	I am certain I can accomplish my goals	1 not at all true;2 hardly true;3 moderately true;4 exactly true	
K4	Eff_shocks	I am confident that I could deal effectively with unexpected events	1 not at all true;2 hardly true;3 moderately true;4 exactly true	
K5	Ef_resour	Thanks to my resourcefulness, I can handle unforeseen situations	1 not at all true;2 hardly true;3 moderately true;4 exactly true	
K6	Eff_effort	I can solve most problems if I invest the necessary effort	1 not at all true;2 hardly true;3 moderately true;4 exactly true	
K7	Eff_calm	I can remain calm when facing difficulties because I can rely on my strength to cope	1 not at all true;2 hardly true;3 moderately true;4 exactly true	
K8	Eff_alter	When I am confronted with a problem, I always look for an alternative solution	1 not at all true;2 hardly true;3 moderately true;4 exactly true	
K9	Eff_troub	If I am in trouble, I can think of a good solution	1 not at all true;2 hardly true;3 moderately true;4 exactly true	
K10	Eff_hnd	I can handle whatever comes my way	1 not at all true;2 hardly true;3 moderately true;4 exactly true	

*Skip to section M after this Module for male head of households.  
Skip to section L.A Time Allocation after this Module for female head of households.*

**L. Wives/Partners Survey**

	<b>Name</b>	<b>Question</b>	<b>Response options/units</b>	<b>Notes/instructions</b>
<i>Thank you for agreeing to answer a few of our questions. We are going to start with some questions to record your basic information.</i>				
L1	wives_consent	Did the respondent consent?	1 Yes 2 No	If 2 >>> End Interview
L2	wives_wmarried	What is your marital status	1=Monogamously married 2=Polygamously married	
L3	wives_wage)	What is your age?	years	
L4	wives_wreligion	What is your religion, if any?	1. Christian (Protestant) 2. Christian (Catholic) 3. Muslim 4. None 5. Other	
L5	wives_wed	What is the highest level of education you have attained?	PRIMARY P1.....11 P2.....12 P3.....13 P4.....14 P5.....15 P6.....16 P7.....17 FORM F1.....21 F2.....22 F3.....23 F4.....24 'O'+COURSE.25 F5.....31 F6.....32 'A'+COURSE.33 DIPLOMA...34 U1.....41 U2.....42 U3.....43 U4.....44	
L6	wives_wborn	Were you born in this village?	U5&+.....45 1 Yes 2 No	If 1 >>> L9

L7                      wives\_wborndist                      Where is the village where you were born?

L8	wives_wyrslive	How many years have you lived in this village?		
L9	Wives_looshus	In the next 5 years, how worried would you be about losing your land if your husband died?	1 Very Worried 2 Somewhat Worried 3 Not worried at all 996 DK 997 Refused to answer	
L10	wives_takeextfam	In the next 5 years, how likely is it that someone from within your extended family will take over the use of this field without your HH's permission/agreement?	1=Very Likely 2=Likely 3=Neutral 4=Somewhat unlikely 5=Very unlikely 996=Don't know 997=Prefer not to reply	
<b>Now I'd like to ask you some questions about your participation in certain types of work activities and on making decisions on various aspects of household life</b>				
L11	wives_part	Did you yourself participate in [ACTIVITY] in the past 12 months (that is, during the last [one/two] cropping seasons), from [PRESENT MONTH] last year to [PRESENT MONTH] this year?  A) Food crop farming B) Cash crop farming C) Livestock raising D) Non-farm economic activities. E) Wage and Salary employment F) Fishing or fishpond culture G) Major hh expenditures H) <del>Minor hh expenditures</del>	1 Yes 2 No	If emp_part==No -> skip to next activity. Activity:
L12	wives_decision	When decisions are made regarding [ACTIVITY], who is it that normally takes the decision?	1. Self 2. Spouse 3. Both spouse and self (joint decision making) 4. Other HH member 5. Other Non-HH member 999. N/A	If emp_decision==1, skip to next activity. No response needed if activity==G or H.
L13	Wives_decisionfreq	When decisions are made regarding [ACTIVITY], how often does the decision maker inform you about the decision?	1 Always 2 Sometimes 3 Rarely 4 Never 5 Unsure	If emp_decision != 1 answer this

L14	wives_input	How much input did you have in making decisions about [ACTIVITY] in the past 12 months?	1. No input or input in few decisions, 2. Input into some decisions, 3. Input into most or all decisions, 98. No decision made/Not sure	If emp_input==98, skip to next activity
L15	emp_extent	To what extent do you feel you can make your own personal decisions regarding [ACTIVITY] if you want(ed) to?	1. Not at all, 2. Small extent, 3. Medium Extent, 4. To a high extent.	
L16	emp_use_inc	How much input did you have in decisions on the use of income generated from [ACTIVITY]	1. No input or input in few decisions, 2. Input into some decisions, 3. Input into most or all decisions, 98. No decision made/Not Sure	No response needed if activity==G or H.
L17	Wives_landlaw	Do you know about the national land laws?	1 Yes 2 Yes, but don't know the details 3 No	
L18	Wives_hearing	How confident are you that you would receive a fair hearing if you had a land dispute?	1 Very confident 2 Somewhat confident 3 Unsure 4 Not confident	
L19	Wives_takepos	Do you think it's possible that someone could try to take one of your parcels from you without your permission, say in the next 5 years?	5 Very unconfident 1 Yes 2 No	Enumerator should specify only the parcels in targeted commune if the respondent has parcels in other communes
L20	Wives_expro	How likely do think it is that someone would try to	1 Unlikely	If 2 >>> L22 If wives_takepos = yes
L21	Wives_reason	take one of your parcels from you in the next 5 years? Which if any of the following are reasons why you think this could happen? <input type="checkbox"/> Ongoing or past disputes or expropriation <input type="checkbox"/> Lack of documents <input type="checkbox"/> Length of agreement (if lease agreement for example) <input type="checkbox"/> Problems experienced by others in the community	2 Somewhat likely 3 Very likely/it is happening now 1 More important reason 2 Less important reason 3 Not a reason	If per_takepos = yes
L22	Wives_meet	How many group/village meetings have you attended in the past six months?	Enter number	

L22.1	Wive_meet_n	What kind of meetings have you attended?	1. Kitongoji Meetings 2. Village Meetings 3. Farmers' cooperative meetings 4. SACCOS or self-help group meeting 5. School meetings (SMC or parents) 6. Other	If wives_meet !=0
L22.2	Wives_meetfreq_n	How many times did you attend [MEETING]?	Enter number	
L22.3	Wives_speak	How many of those meetings have you spoken to the group?	Enter number	
L22.4	Wives_speakfreq	How many times did you speak at [MEETING]?	Enter number	If wives_speak != 0
L23	Wives_comfort	Do you feel comfortable speaking at village meetings or in group settings?	1 Yes 2 No	
L24	Wives_wgroup	Are there women's groups in the village or surrounding area?	1 Yes 2 No	If yes, continue If 2 >>> L26
L25	Wives_wattend	How many women's group meetings have you attended?	Enter number	If >0, continue
L25.1	Wive_totattend	How many women would you estimate were at the meeting?	Enter number	If many meetings (>10) were attended, this should refer to average.
L26	Wives_Lan_dcd_i	Who primarily decides how to use this household's parcel(s)?	1=Self 2=Spouse/Head of HH 3=Both self and spouse together 4=Other male household member 5=Other female household member 990=Other, specify	
L27	Wives_Lan_inco_i	Who decides how to use any income generated from the use of this household's parcel(s)?	1=Self 2=Spouse/Head of HH 3=Both self and spouse together 4=Other male household member 5=Other female household member 990=Other, specify	
<b>Next I'd like to ask about your household's experience with borrowing money or other items in the past 12 months.</b>				
L28	Wives_loan	Over the past 12 months, did you or anyone else in this household borrow from someone outside the household or from an institution receiving either cash, goods, or services?	1 Yes 2 No	If 2 >>> L29

L28.1      Wive\_loan\_source      What was the source of the loan(s)?      1    COMMERCIAL BANKS

2 MICRO-FINANCE INST

Select all that apply

			3 VILLAGE COMMUNITY BANK (VICOBA) 4 NEIGHBOURS / FRIENDS 5 FAMILY 6 NGO OR SELF-HELP GROUPS 7 OTHER INFORMAL MONEY LENDER 990 OTHER, SPECIFY	
L28.2	Wives_loan_dec	Who made the decision to borrow from [SOURCE] most of the time?	1 SELF 2 SPOUSE 3 Both spouse and self (joint decision making) 4 OTHER HH MEMBER 5 OTHER NON-HH MEMBER 999 NOT APPLICABLE	Select all that apply
L28.3	Wives_loan_decuse	Who makes the decision about what to do with the money/ item borrowed from [SOURCE] most of the time?	1 SELF 2 SPOUSE 3 Both spouse and self 4 OTHER HH MEMBER OTHER NON-HH MEMBER 999 NOT APPLICABLE	Select all that apply
L28.4	Wives_loan_use	What did you use this loan/credit for?	1 SUBSISTENCE NEEDS 2 MEDICAL COST 3 SCHOOL FEES 4 CEREMONY/WEDDING 5 PURCHASE LAND 6 PURCHASE AGRIC. INPUTS 7 OTHER BUSINESS INPUTS 8 PURCHASE AGRIC. MACHINERY 9 BUY/BUILD DWELLING 990 OTHER(SPECIFY)	
L29	Wives_Lan_doc_i	Do you or your household have any kind of documentation of your rights to your HH's parcels?	1 Yes 2 No	If 2 >>> L31

L29.1	Wives_Lan_typedoc_i	What kind of documentation? SELECT ALL THAT APPLY	1. GRANTED RIGHT OF OCCUPANCY 2. CERTIFICATE OF CUSTOMARY RIGHT OF OCCUPANCY 3. INHERITANCE LETTER 4. OTHER GOVERNMENT DOCUMENT 5. OTHER DOCUMENT OR LETTER (NON-GOVERNMENT/UNOFFICIAL)	If land_doc_i=yes next question
L29.2	Wives_Lan_docobtain_i	When did you obtain the documentation?	Year/Month	If wives_land_doc_i=yes next question
L29.3	Wives_Lan_docobtain_i	How many people have ownership rights under this documentation?		Enter number
<b>Now I am going to read out some statements to you; please tell me how true each of the statements is about you.</b>				
L30	Wives_Eff_solve	I can always manage to solve my problems if I try	1 not at all true;2 hardly true;3 moderately true;4 exactly true	
L31	Wives_Eff_opp	hard enough If someone opposes me, I can find the means and ways to get what I want	1 not at all true;2 hardly true;3 moderately true;4 exactly true	
L32	Wives_Eff_accu	I am certain I can accomplish my goals	1 not at all true;2 hardly true;3 moderately true;4 exactly true	
L33	Wives_Eff_shocks	I am confident that I could deal effectively with unexpected events	1 not at all true;2 hardly true;3 moderately true;4 exactly true	
L34	Wives_Ef_resour	Thanks to my resourcefulness, I can handle unforeseen situations	1 not at all true;2 hardly true;3 moderately true;4 exactly true	
L35	Wives_Eff_effort	I can solve most problems if I invest the necessary effort	1 not at all true;2 hardly true;3 moderately true;4 exactly true	
L36	Wives_Eff_calm	I can remain calm when facing difficulties because I can rely on my strength to cope	1 not at all true;2 hardly true;3 moderately true;4 exactly true	
L37	Wives_Eff_alter	When I am confronted with a problem, I always look for an alternative solution	1 not at all true;2 hardly true;3 moderately true;4 exactly true	
L38	Wives_Eff_troub	If I am in trouble, I can think of a good solution	1 not at all true;2 hardly true;3 moderately true;4 exactly true	
L39	Wives_Eff_hnd	I can handle whatever comes my way	1 not at all true;2 hardly true;3 moderately true;4 exactly true	

L40

Per\_landlaw

How well do you understand the official land laws?

1 Very well 2 Familiar but don't know the details 3 Familiar with

			some rules but don't know if they are official law 4 Unsure	
L41	Wives_CCRO	Have you heard of CCROs?	1 Yes 2 No	If 2 >>>Wives_LTA Enter amount in TShs.
L41.1	Wives_payCCRO	In general, how much (if anything) would you be willing to pay to have one of your parcels surveyed and to receive a CCRO?		If 2 >>> Next section. DO NOT PROMPT IF RESPONDENT HAS NOT HEARD OF LTA. If Wives_LTA= yes
L42	Wives_LTA	Have you heard of [LTA]?	1 Yes 2 No	If Wives_LTA= yes
L42.1	Wives_LTArec	Which of the following did you receive through LTA?	<input type="checkbox"/> Land was surveyed <input type="checkbox"/> CCRO <input type="checkbox"/> Notarized title <input type="checkbox"/> None of the above	If Wives_LTA = yes
L42.2	Wives_LTAimpr	What was your impression of LTA?	1 Very positive 2 Somewhat positive 3 Neutral 4 Somewhat negative 5 Very negative	
L42.3	Wives_docyben	Do you believe that having documentation of your land rights through LTA benefits your household?	1 Yes 2 No	
L42.4	Wives_LTAcom	Do you think LTA has benefited your community in any of the following ways:  <input type="checkbox"/> Protects against losing land <input type="checkbox"/> Protects against disputes with neighbors <input type="checkbox"/> Makes it easier to rent out <input type="checkbox"/> Makes it easier to sell <input type="checkbox"/> Will make inheritance easier <input type="checkbox"/> Other	1. YES 2. NO	If Wives_docyben = yes

SELECT ALL THAT APPLY

#### L.A Time Allocation

Now I'd like to ask you about how you spent your time during the past 24 hours. We'll begin from yesterday morning, and continue through to this morning. This will be a detailed accounting. I'm interested in everything you do (i.e. resting, eating, personal care, work inside and outside the home, caring for children, cooking, shopping, socializing, etc.), even if it doesn't take you much time.

PLEASE RECORD A LOG OF THE ACTIVITIES FOR THE INDIVIDUAL IN THE LAST COMPLETE 24 HOURS (STARTING YESTERDAY MORNING AT 4 AM, FINISHING 3:59 AM OF THE CURRENT DAY). THE TIME INTERVALS ARE MARKED IN 15 MIN INTERVALS AND ONE ACTIVITY CAN BE MARKED FOR EACH TIME PERIOD BY DRAWING AN X THROUGH THAT ACTIVITY.

Activity		Night				Morning				Day				
A	Sleeping and resting	4	5	6	7	8	9	10	11	12	13			
B	Eating and drinking													
C	Personal care													
D	School (also homework)													
E	Work as employed													
F	Own business work													
G	Farming/livestock/fishing													
H	Shopping/getting service (incl health services)													
I	Weaving, sewing, textile care													
J	Cooking													
K	Domestic work (incl fetching wood and water)													
L	Care for children/adults/elderly													
M	Travelling and communiting													
N	Watching TV/listening to radio/reading													
O	Exercising													
P	Social activities and hobbies													
Q	Religious activities													
R	Other, specify...													
Activity		Evening				Night								
A	Sleeping and resting	17	18	19	20	21	22	23	24	1	2	3		
B	Eating and drinking													
C	Personal care													
D	School (also homework)													
E	Work as employed													
F	Own business work													
G	Farming/livestock/fishing													
H	Shopping/getting service (incl health services)													
I	Weaving, sewing, textile care													
J	Cooking													
K	Domestic work (incl fetching wood and water)													
L	Care for children/adults/elderly													
M	Travelling and communiting													
N	Watching TV/listening to radio/reading													
O	Exercising													

- P Social activities and hobbies
- Q Religious activities
- R Other, specify...

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**FOR FEMALE HEAD OF HOUSEHOLDS CONTINUE TO SECTION M AFTER FILLING OUT THE TIME USE SURVEY.**

**M. Sketch map instructions**

The purpose of the sketch map exercise is to improve the accuracy with which parcels can be re-identified in follow-up rounds of the survey. The sketch map exercise should be carried out just prior to the Landholdings and Characteristics section of the questionnaire. The enumerator should draw the sketch map, with instructions from the respondent and any other household members present. The parcel on which the interview is being conducted should be located in the center of the map. Each of the household's other parcels should be indicated on the map according to the distance and direction and the respondent indicates. On the sketch map, the enumerator should record the following for each of the parcels:

- Time it takes to reach that parcel by foot from the home
- Name of the parcel
- Size of the parcel
- How long ago did the household acquire (or begin renting) the parcel?
- Type of terrain
- Land use in the past season (agriculture, left fallow, non-agricultural use)
- If agriculture, the main crop that is grown on the parcel

The map should also show geographic features such as rivers, roads, mountains, and the village center that will help to show where the parcel is.

**[TAKE PHOTO OF SKETCH]**

**GPS STAMP.**

## ANNEX C: MIDLINE SURVEY INSTRUMENT

### ADMINISTRATIVE INFORMATION

#### A. Admin info

<b>Household number</b>	□ □ □ □		
<b>Date of interview:</b>	<b>DD</b> □ □	<b>MM</b> □ □	<b>YY</b> □ □
<b>Time of interview:</b> (24 hour clock)	<b>Start</b> <b>MM</b>	<b>HH</b>	<b>Stop</b> <b>HH</b> <b>MM</b>
<b>Name of interviewer:</b>	□ □ □ □ □ □ □ □		
<b>Code of interviewer</b>			
<b>Place of interview:</b>			
<b>Ward</b>			
<b>Village</b>			
<b>Point of interview</b>	<ol style="list-style-type: none"> <li>1. Respondent's residence</li> <li>2. In one of the household's parcel of land</li> <li>3. Away from respondent's place of residence and/or parcel of land</li> </ol>		
<b>GPS Coordinates</b>			
<b>Number of visits (max. of 3)</b>			
<b>Reason for call back</b>	<b>Number of visits</b>		
	<b>1</b>	<b>2</b>	<b>3</b>
Refused to be interviewed		1	1
Target respondent not at home		2	2
Target respondent requested for a call back			
No one in the household		3	3
Respondent not able to be interviewed due to medical reasons (very sick, dumb, etc.)		4	4
No adult member in the household		5	5
Language barrier		6	6
Not applicable		99	99
<b>Outcome of final visit</b>	<b>Successful</b>	<b>Incomplete</b>	<b>Replaced</b>

<b>Field quality control checks (sign as appropriate)</b>		
<b>Activity</b>	<b>Activity undertaken by</b>	
	<b>Interviewer</b>	<b>Supervisor</b>
<b>Reviewed</b>		
<b>Accompanied</b>		
<b>Back checked</b>		
<b>Called back</b>		

## B. HH Roster info

B1.2	hou_num_n	How many members constitute this household?	Enter number of household members based on hou_nme.	
B1.3	hou_nme	Can you tell me the name of all the members of this household?		RECORD THE HOUSEHOLD MEMBERS BEGINNING WITH THE HOUSEHOLD HEAD, FOLLOWED BY THE SPOUSE AND THEN THE CHILDREN STARTING WITH OLDEST FIRST AND CONCLUDING WITH THE YOUNGEST.
B5	hou_age_n	How old is [NAME] in completed years?		Enter age. Enter 996 for Don't Know.

## C. Agricultural Organizations, Services and Training

	Name	Question	Response options/units	Notes/instructions
C3	org_srv	Did you or anyone in your household receive any agricultural extension services in the past 12 months?	1. Yes 2. No 996. Don't know	If 2 >>> C5
C3.1	org_prd	What kind of services were provided?	1. Access to improved seed 2. Fertilizer, pesticides and other chemical inputs 3. Tractor services 4. Marketing services 5. Transport services 6. The opportunity to participate in a value chain scheme 7. Help to form or strengthen farmer groups 8. Contract farming 9. Post-harvest processing of ANY of crops (including drying, sorting, packaging, and/or storing) 10. Purchasing of ANY of the crops 11. Training on agricultural production and/or processing 12. Training on business practices 990. Other, SPECIFY _____	If org_srv = yes
C3.2	org_used_srv	How often has anyone in your household made use of extension services in the past 12 months?	1 3 times or more 2 Once or twice 3 Never	
C4	org_trnd	In the past 12 months, have you or anyone in your household received any kind of community or organizational assistance related to agriculture, such as	1. Yes 2. No 996. Don't know	If org_trnd != 1 skip to next module If 2 OR 996 >>> Next

		assistance from an NGO or community group?		Section
C4.1	org_what	What kind of services were provided?	<ol style="list-style-type: none"> <li>1. Free food/maize distribution</li> <li>2. Food-for-work programme or cash-for-work programme</li> <li>3. Inputs-for work programme</li> <li>4. Attended a training or workshop</li> <li>5. Had an agent visit my/our parcel(s)</li> <li>6. Read a pamphlet</li> <li>7. Other assistance (not listed above)</li> </ol>	
C4.2	org_frequ	For how many days in the past 12 months did you or anyone in your household receive these services?	Enter days	
C5	org_name	<p>Are you aware of these organizations working in your village?</p> <p>MARK ALL THAT APPLY</p>	<ol style="list-style-type: none"> <li>1. One Acre Fund</li> <li>2. Briten</li> <li>3. Unicef</li> <li>4. Eadd</li> <li>5. Cuamm</li> <li>6. Clinton Foundation</li> <li>7. Tahea</li> <li>8. Camfed</li> <li>9. Cefa</li> <li>10. Wopata</li> <li>11. Jica</li> <li>12. TIB</li> <li>13. Concern</li> <li>14. Tunajali</li> <li>15. SNV</li> <li>16. TNRF</li> <li>17. TCD</li> <li>18. IMO</li> <li>19. Cheet</li> <li>20. Restless Development</li> <li>21. LEAT</li> <li>22. Caltas</li> </ol>	Select all that apply

**D. Landholdings and Characteristics**

	Name	Question	Response options/units	Notes/instructions
<i>Thank you for the earlier responses. I would now like to ask you a few questions about your landholdings and the parcels you farm.</i>				
D1	Lan_num	How many different parcels does the household own, rent, or use?	Enter number	
D2	Lan_name	Please give each parcel a name so we can keep track during the interview		If lan_num > 1. From here down, ask for each parcel.
D6	Lan_size_i	What is the size of [PARCEL ID]?	Quantity	Unit
D12	Lan_doc_i	Do you or your household have any kind of documentation of your rights to any of your parcels?	1. Yes 2. No 996. Don't know	If Lan_doc_i != 2 OR 996 skip to Lan_use_i (D13)
D12.1	Lan_docparcel_i	Which parcels?	Record Parcel IDs	
D12.2	Lan_typedoc_i	What kind of documentation? SELECT ALL THAT APPLY.	1. GRANTED RIGHT OF OCCUPANCY 2. CERTIFICATE OF CUSTOMARY RIGHT OF OCCUPANCY (CCRO) 3. INHERITANCE LETTER 4. OTHER GOVERNMENT DOCUMENT 5. OTHER DOCUMENT OR LETTER (NON-GOVERNMENT/UNOFFICIAL)	
D12.3	Lan_docobtain_i	What year did you obtain the documentation for [PARCEL ID]?	Year	If land_doc_i=yes next question. 996 if unsure/don't know.
D12.4	Lan_docobtainmon_i	What month did you obtain the documentation for [PARCEL ID]?	Month	Enter 996 if unsure/ don't know
D12.5	Lan_docnum_i	How many people in household have their names listed on the documentation you have for [PARCEL ID]?		Enter number; If don't know, enter 996
D12.6	Lan_docwho_i	Who in the household is listed as the primary land user on the documentation for [PARCEL ID]?	1. Self/Husband 2. Wife/Spouse 3. Jointly listed (husband/wife) 4. Other 996. Don't know	
D12.7	Lan_docphys_i	Do you have a personal copy of the document?	1 Yes 2 No	If lan_typedoc_i == 2 (ccro) If 2 >>> D12.9

D12.8	Lan_docloc_i	Where do you store a copy of the document?	1. In homestead 2. With a nearby family member 3. At the village center 4. At the DLO/With the government	If lan_typedoc_i == 2 (ccro)
D12.9	Lan_docuse_i	Have you ever had to reference the document?	1 Yes 2 No	If lan_typedoc_i == 2 (ccro) If 2 >>> D13
D12.10	Lan_docusetype_i	Why did you reference the document?	1. To resolve a dispute 2. To obtain a loan 3. To plan inheritance 4. To prove ownership (not dispute related) 5. As part of a rental agreement 990. Other	Lan_docuse_i == yes
D13	Lan_use_i	During last year's agricultural seasons, did your household farm [PARCEL ID], leave it fallow, or use it for pasture or some other non-agricultural use?	1 Farmed this parcel 2 Left this parcel fallow 3 Used this parcel as pasture/other non-agricultural use	
D17	Lan_inherp_i	Do you have an inheritance plan for your parcels?	1 Yes 2 No	If no skip to lan_svy_i
D17.1	Lan_inhe_who_i	Have you discussed this plan with anyone?	1 Yes 2 No	If not skip to lan_svy_i
D17.2	Lan_inhe_name	Who have you discussed this with?	1 Wife/Spouse 2 Children 3 Other Family 4 Village leaders 5 Other	
D18	Lan_svy_i	Have your parcels ever been mapped by surveyor?	1 Yes 2 No 996 Don't know	If 2 OR 996 >>> D24
D24	Lan_irr_i	Are your parcels irrigated?	1 Yes 2 No	
D25	Lan_restyn_i	Have you ever left any of your parcels fallow?	1 Yes 2 No	If 2, skip to lan_imp_i
D25.1	Lan_rest_i	What was the most recent year in which you left any of your parcels fallow?		Enter 996 if don't know;

D25.2	Lan_restperct_i	What portion of your parcels were left fallow?	Enter percentage	Answer only if lan_restyn_i = 1
D26	Lan_imp_i	For each of the following items I am going to ask about, I want to know if you have made any of the following improvements to this parcel in the past six months		
D26.1	Lan_imp_well_i	<ul style="list-style-type: none"> <li>Digging wells or pump irrigation</li> </ul>	1 Yes 2 No	
D26.2	Lan_imp_building_i	<ul style="list-style-type: none"> <li>Erecting buildings</li> </ul>	1 Yes 2 No	
D26.3	Lan_imp_fence_i	Erecting fencing	1 Yes 2 No	
D26.4	Lan_imp_terr_i	<ul style="list-style-type: none"> <li>Terracing</li> </ul>	1 Yes 2 No	
D26.5	Lan_imp_soil_i	<ul style="list-style-type: none"> <li>Soil conservation</li> </ul>	1 Yes 2 No	

#### E. Perceptions of land rights

	Name	Question	Response options/units	Notes/instructions
		Ok. I would like to ask you about some issues around land in this village. I only want to talk about parcels here (in this village), not things you may have heard in nearby villages (or plots you may have elsewhere).		Leave out mention of parcels in other villages if it is not relevant.
F1	Per_takepos	In the next five years, do you think it's possible that someone could try to take one of your parcels from you without your permission?	1 Yes 2 No 996 Don't know	If 2 OR 996 >>> F6
F2	Per_expro	How likely do think it is that someone would try to take one of your parcels from you in the next 5 years?	1 Possible but unlikely 2 Somewhat likely 3 Very likely/it is happening now	If per_takepos = yes
F4	Per_source_i	Who do you think would try to take your parcels?	1. Government 2. Foreign investor 3. Tanzanian investor (from outside the village) 4. Someone inside the village 5. Absentee owner/land claimants 6. Extended family 7. Other	If per_expro != 1
F5	Per_reason	Which if any of the following are reasons why you think this could happen? Please rank from the most important reason to the least important reason	Enter rank order. If one or more options are not relevant, ask for top rank and then determine which seem the least irrelevant of	If per_takepos = yes

		<ol style="list-style-type: none"> <li>1. Ongoing or past disputes or expropriation</li> <li>2. Lack of documents</li> <li>3. Length of agreement (if lease agreement for example)</li> <li>4. Problems experienced by others in the community</li> </ol>	the irrelevant options and work from there.	
F7	Per_comworry	In general, how many people in your community are worried that someone might try to take their land against their will?	1 None or very few 2 Some are worried but most are not 3 Most are worried but not all 4 All or nearly all are worried	
F8	Per_borpos	Do you think it's possible that you could have a dispute over the borders of one of your parcels with a neighbor in the next 5 years?	1 Yes 2 No	If 2 >>> F10
F9	Per_disputeprob	How likely do think it is that you could have a dispute over the borders of one of your parcels with a neighbor in the next 5 years?	1 Possible, but unlikely 2 Somewhat likely 3 Very likely/it is happening now	If per_borpos = yes
F10	Per_reasonwhy	Which if any of the following are reasons why you don't think this is possible? <ul style="list-style-type: none"> <li>• My family has owned/used the parcel for a long time</li> <li>• Lack of problems in the past</li> <li>• Land has been surveyed</li> <li>• HH has documentation of rights</li> <li>• Village Council/Elders/Leaders can easily address potential disputes</li> </ul>	Select all that apply.	If per_takepos = no
F14	Per_future	In the next 12 months, do you expect problems with land disputes will improve, stay the same, or get worse?	1 Improved 2 Stayed the same 3 Gotten worse	
F15	Per_coma	Do you use communal pasture land?	1 Yes 2 No	If 2 >>> F17
F16	Per_coml	Do you think it is possible that you will lose your existing rights on communal pasture land in the next 12 months?	1 Yes 2 No 996 Don't know	Answer if per_coma=Yes If 2 OR 996 >>> F17
F16.1	Per_coml_why	How likely do you think it is that you would lose your existing rights on communal pasture land in the next 12 months	1 Highly likely 2 Somewhat likely 3 Possible but unlikely	If per_coml = Yes
F16.2	Per_comr	Why do you think you will lose your existing rights on communal pasture land in the future?	1= Local farmers encroaching onto communal land or access routes. 2= Village will decide to allocate the land for other uses. 3= The government will allocate the communal land to an investor	Answer if per_coml=Yes

			990= Other (please specify)	
F17	Per_fallow	How much of a risk is there that someone will take over one of your plots if you leave it fallow?	1 Very high risk 2 Somewhat risky 3 No risk 4 Unsure	
F18	Per_inheritforce	In general, do you feel that your plans for land inheritance will be enforced?	1 Yes 2 No 996 Don't know/unsure	
F19	Per_landlaw	How well do you understand the official land laws?	1 Very well 2 Familiar but don't know the details 3 Familiar with some rules but don't know if they are official law 4 Unsure	
F20	Per_CCRO	Have you heard of CCROs?	1 Yes 2 No	If 2 >>>Per_LTA. DO NOT PROMPT IF RESPONDENT HAS NOT HEARD OF CCROs.
F20.1	Per_payCCRO	In general, how much (if anything) would you be willing to pay to have one of your parcels surveyed and to receive a CCRO?		
F21	Per_LTA	Have you heard of LTA?	1 Yes 2 No	If 2 >>> Next section. DO NOT PROMPT IF RESPONDENT HAS NOT HEARD OF LTA!
F21.1	Per_LTAvisit	Did LTA visit your parcel in the past 2 years?	1 Yes 2 No	If 2 >>> Next section
F21.2	Per_LTArec	Which of the following did you receive through LTA?  MARK ALL THAT APPLY	<ul style="list-style-type: none"> <li>• Land was surveyed/ mapped</li> <li>• CCRO</li> <li>• Notarized title</li> <li>• None of the above</li> </ul>	If Per_LTAvisit= yes
F21.3	Per_LTAinfo	Before the LTA process began, did you receive any information about what was going to happen?	1 Yes 2 No	If no >>> Per_LTAtime
F21.4	Per_LTAinfotype	What kind of information? Select all that apply	<ul style="list-style-type: none"> <li>• community meetings with VEO</li> <li>• community meetings with LTA</li> <li>• individually consulted by VEO</li> <li>• Individually consulted by LTA</li> <li>• Other</li> </ul>	
F21.5	Per_LTAsuff	Did you feel this information was sufficient for you to understand what was happening and how you could obtain your CCRO?	1 Yes 2 No	

F21.6	Per_LTAmap	Were you present when your parcels were being mapped?	1 Yes 2 No	Only answer if "Land was surveyed/mapped" as part of Per_LTArec
F21.7	Per_LTAmappres	Would you have like to have been present when your parcels were being mapped?	1 Yes 2 No	If Per_LTAmap = no
F21.8	Per_LTAverify	During the verification process, did you feel you were adequately informed about who was claiming rights to what parcel?	1 Yes 2 No	
F21.9	Per_LTAverifypeople	During the verification process, do you think there were there other people in the village who felt that they were not adequately informed about who was claiming what parcel?	1 Yes 2 No	
F21.10	Per_LTAtime	When did LTA visit your parcel?	Month/Year	If Per_LTAvisit = yes
F21.11	Per_LTAmap	When did [Per_LTArec response] take place?	Month/Year	Based on Per_LTArec
F21.12	Per_LTAprocess	How long did the LTA process take?	Enter days	
F21.13	Per_LTAprob	Did you encounter any issues during the LTA process	1 Yes 2 No	If per_LTAvisit = yes If 2 >>> F21.8
F21.14	Per_LTAprobtype	What kind of issues did you encounter?	1. Issue related to existing land dispute 2. Issue related to new dispute caused by mapping 3. Missed deadline 4. Other	If Per_LTAprob = yes
F21.15	Per_CCRO	How much time passed between mapping and receipt of your CCRO?	Enter months	If per_LTArec = CCRO
F21.16	Per_LTAimpr	What was your impression of LTA?	1 Very positive 2 Somewhat positive 3 Neutral 4 Somewhat negative 5 Very negative	If Per_LTA = yes
F21.17	Per_docyben	Do you believe that having documentation of your land rights through LTA benefits your household?	1 Yes 2 No 996 Don't know	
F21.18	Per_LTAcom	What are the benefits to LTA in your village?  ALL THAT APPLY	<ul style="list-style-type: none"> <li>• Protects against losing land</li> <li>• Protects against disputes with neighbors</li> <li>• Makes it easier to rent out</li> <li>• Makes it easier to sell</li> <li>• Will make inheritance easier</li> <li>• Other</li> </ul>	If per_docyben = yes

**F. Land disputes**

	Name	Question	Response options/units	Notes/instructions
<i>This next line of questioning addresses disputes around land in the village. As a reminder, we are not going to share your responses with anyone else in the village or to anyone in the government. Your responses will not affect whether this village receives services or not. We just want to learn more about disputes here.</i>				
G1	Dis_dis	In the past six months, has anyone in your household been involved in any dispute or argument about land- for example, about who owns or has rights to a parcel, boundaries of parcels, or inheritance of land?	1 Yes 2 No	If 2 >>> Next section
G1.1	Dis_disnum	How many disputes?	#	
G1.3	Dis_own_j	Does the household currently use the parcel over which the dispute occurred?	1 Yes 2 No	
G1.5	Dis_type_j	What was the dispute related to? Select all that apply.	1 Land that the household owned or was using 2 The household trying to acquire new land 3 Land rented from the household 4 Land rented by the household 5 Inheritance 6 Grazing 7 Other	If 1 >>> G1.6 2 >>> G1.7 3 >>> G1.8 4 >>> G1.9 5 >>> G1.10 6 >>> G1.11
G1.6	Dis_desc1_j	Which of the following best describes the dispute?	1 Someone who lives in the area tried to take the household's land 2 Someone from outside the area tried to take the household's land 3 Boundary dispute with neighbor 4 Government tried to take the land or stop the household from using it	If dis_type_j = 1
G1.7	Dis_desc2_j	Which of the following best describes the dispute?	1 The household bought/claimed/requested some new land, but someone else claimed to be the owner 2 The household did not buy the land but wanted land that someone else was using 3 None of the above	If dis_type_j = 2
G1.8	Dis_desc3_j	Which of the following best describes the dispute?	1 Payment of rent/crops 2 Length of rental agreement 3 Renter tried to claim ownership	If dis_type_j = 3

			4 Other	
G1.9	Dis_desc4_j	Which of the following best describes the dispute?	1 Payment of rent/crops 2 Length of rental agreement 3 Disagreement over ownership 4 Other	If dis_type_j = 4
G1.10	Dis_desc5_j	Which of the following best describes the dispute?	1 Disagreement with brothers/sisters over parents' land 2 Widow/widower whose land is being claimed by spouse's relatives 3 Other	If dis_type_j = 5 Need to tailor this one
G1.11	Dis_desc6_j	Which of the following best describes dispute?	1 Disagreement with pastoralists over grazing on land 2 Disagreement with non-pastoralists from the village over grazing on land 3 Disagreement with non-pastoralists from outside the village over grazing on land 3 Other	If dis_type_i=6
G2	Dis_desc7_i	Describe the dispute	Write response	If dis_type_i= 7
G3	Dis_yr_j	In what year did the dispute begin?		
G4		How long did the dispute last?	Months	
G5	Dis_serious_j	Overall, how serious was the dispute?	1 Very serious 2 Somewhat serious 3 Not serious	Guidance: "serious" here means that it disrupted or altered normal life activities.
G6	Dis_mny_j	Did you lose money because of the dispute?	1 Yes, a little (less than TZS 10,000) 2 Yes, a lot (more than TZS 10,000) 3 No	
G7	Dis_safe_j	Did the dispute make you worried about your safety?	1 Yes, a lot 2 Yes, a little 3 No	
G8	Dis_resolved_j	Was the dispute resolved?	1 Yes 2 No	If 2 >>> G9
G8.1	Dis_who_resolved_j	Who resolved the dispute?	1 We resolved it amongst ourselves 2 Others in the community 3 The Village Council 4 District Courts 6 District Officials 7 Village land use committee	If yes to dis_resolved_j Need to tailor

			8 Ward land use committee 9 Other	
G8.2	Dis_satis_j	How satisfied were you with how the dispute was resolved?	1 Very satisfied 2 Somewhat satisfied 3 Not satisfied	If yes to dis resolved j
G9		How likely is it that you will have another dispute like your dispute?	1 Very likely 2 Somewhat likely 3 Not likely 4 Unsure	

#### G. Non-Agricultural Income, Consumption, and Assets

	Name	Question	Response options/units	Notes/instructions
HI	Inc_own	Does your household currently own any of the following items in good working condition: [READ EACH OPTION OUT LOUD AND MARK IF ANSWER "YES" or 'NO']		
HI.1	Inc_own_radio	<ul style="list-style-type: none"> <li>Radio or Radio Cassette</li> </ul>	1 Yes 2 No	
HI.2	Inc_own_mobile	<ul style="list-style-type: none"> <li>Telephone(mobile)</li> </ul>	1 Yes 2 No	
HI.3	Inc_own_sewm	<ul style="list-style-type: none"> <li>Sewing Machine</li> </ul>	1 Yes 2 No	
HI.4	Inc_own_tv	<ul style="list-style-type: none"> <li>Television</li> </ul>	1 Yes 2 No	
HI.5	Inc_own_dvd	<ul style="list-style-type: none"> <li>Video / DVD</li> </ul>	1 Yes 2 No	
HI.6	Inc_own_lanterns	<ul style="list-style-type: none"> <li>Lanterns</li> </ul>	1 Yes 2 No	
HI.7	Inc_own_otherstove	<ul style="list-style-type: none"> <li>Stove</li> </ul>	1 Yes 2 No	
HI.8	Inc_own_bicycle	<ul style="list-style-type: none"> <li>Bicycle</li> </ul>	1 Yes 2 No	
HI.9	Inc_own_watches	<ul style="list-style-type: none"> <li>Watches</li> </ul>	1 Yes 2 No	
HI.10	Inc_own_mnets	<ul style="list-style-type: none"> <li>Mosquito net</li> </ul>	1 Yes 2 No	
HI.11	Inc_own_iron	<ul style="list-style-type: none"> <li>Iron (Charcoal or electric)</li> </ul>	1 Yes 2 No	
HI.12	Inc_own_fanair	<ul style="list-style-type: none"> <li>Fan/Air conditioner</li> </ul>	1 Yes 2 No	
HI.13	Inc_own_fields	<ul style="list-style-type: none"> <li>Fields/Land</li> </ul>	1 Yes 2 No	

H1.14	Inc_own_solar	<ul style="list-style-type: none"> <li>Solar panel</li> </ul>	1 Yes 2 No	
H1.15	Inc_own_house	<ul style="list-style-type: none"> <li>Houses/housing addition</li> </ul>	1 Yes 2 No	
H1.16	Inc_own_poultry	<ul style="list-style-type: none"> <li>Poultry</li> </ul>	1 Yes 2 No	
H1.17	Inc_own_livestock	<ul style="list-style-type: none"> <li>Livestock</li> </ul>	1 Yes 2 No	
H1.18	Inc_own_other	<ul style="list-style-type: none"> <li>Other</li> </ul>	1 Yes 2 No	
H1.11	Inc_own_radio_num	<ul style="list-style-type: none"> <li>Radio or Radio Cassette</li> </ul>	Quantity	If inc_own_radio = yes
H1.21	Inc_own_mobile_num	<ul style="list-style-type: none"> <li>Telephone(mobile)</li> </ul>	Quantity	If inc_own_mobile = yes
H1.31	Inc_own_sewm_num	<ul style="list-style-type: none"> <li>Sewing Machine</li> </ul>	Quantity	If own_sewm_num = yes
H1.41	Inc_own_tv_num	<ul style="list-style-type: none"> <li>Television</li> </ul>	Quantity	If inc_own_tv = yes
H1.51	Inc_own_dvd_num	<ul style="list-style-type: none"> <li>Video / DVD</li> </ul>	Quantity	If inc_own_dvd = yes
H1.61	Inc_own_lanterns_num	<ul style="list-style-type: none"> <li>Lanterns</li> </ul>	Quantity	If inc_own_lanterns=yes
H1.71	Inc_own_stove_num	<ul style="list-style-type: none"> <li>Stove</li> </ul>	Quantity	If inc_own_stove = yes
H1.81	Inc_own_bicycle_num	<ul style="list-style-type: none"> <li>Bicycle</li> </ul>	Quantity	If inc_own_bicycle = yes
H1.91	Inc_own_watches_num	<ul style="list-style-type: none"> <li>Watches</li> </ul>	Quantity	If inc_own_watches = yes
H1.101	Inc_own_mnets_num	<ul style="list-style-type: none"> <li>Mosquito net</li> </ul>	Quantity	If inc_own_mnets = yes
H1.111	Inc_own_iron_num	<ul style="list-style-type: none"> <li>Iron (Charcoal or electric)</li> </ul>	Quantity	If inc_own_iron = yes
H1.121	Inc_own_fanair_num	<ul style="list-style-type: none"> <li>Fan/Air conditioner</li> </ul>	Quantity	If inc_own_fanair = yes
H1.131	Inc_own_fields_num	<ul style="list-style-type: none"> <li>Fields/Land</li> </ul>	Quantity	If inc_own_fields = yes
H1.141	Inc_own_solar_num	<ul style="list-style-type: none"> <li>Solar panel</li> </ul>	Quantity	If inc_own_solar = yes
H1.151	Inc_own_house_num	<ul style="list-style-type: none"> <li>Houses/housing addition</li> </ul>	Quantity	If inc_own_house = yes
H1.161	Inc_own_poultry_num	<ul style="list-style-type: none"> <li>Poultry</li> </ul>	Quantity	If inc_own_poultry = yes
H1.171	Inc_own_livestock_num	<ul style="list-style-type: none"> <li>Livestock</li> </ul>	Quantity	If inc_own_livestock= yes
H1.181	Inc_own_other_num	<ul style="list-style-type: none"> <li>Other</li> </ul>	Quantity by specified item	If inc_own_other = yes
H2	Inc_own_ani	Which of the following animals are owned by the household?	1. Cows, oxens and bulls 2. Horses, donkeys and mules 3. Pigs 4. Goats	

			<ul style="list-style-type: none"> <li>5. Sheep</li> <li>6. Poultry</li> <li>7. Other</li> <li>8. None</li> </ul>	
H3	Inc_hwalls	What is the major construction material of the walls of the main dwelling?	<ul style="list-style-type: none"> <li>1. POLES (INCLUDING BAMBOO), BRANCHES, GRASS)</li> <li>2. POLES AND MUD/MUD AND STONES</li> <li>3. MUD ONLY</li> <li>4. MUD BRICKS</li> <li>5. BAKED/BURNT BRICKS</li> <li>6. CONCRETE, CEMENT, STONES</li> <li>990. OTHER, SPECIFY</li> </ul>	Enumerator should directly observe to confirm response.
H4	Inc_hroof	What is the major construction material of the main roof?	<ul style="list-style-type: none"> <li>1. GRASS, LEAVES, BAMBOO</li> <li>2. MUD AND GRASS</li> <li>3. CONCRETE, CEMENT</li> <li>4. METAL SHEETS (GCI)</li> <li>5. ASBESTOS SHEETS</li> <li>6. TILES</li> <li>7. OTHER, SPECIFY</li> </ul>	

## A. Agricultural Production

### E.1 Annual Crops

E1.2	Ann_difcrop_i	How many different crops did you grow on your plots?	Enter number	
E1.3	Ann_croprain_i	What crops were grown on during the past rainy season?		Select crops from list.
E1.6	Ann_soil_i	What did you use to till the soil on [PLOT ID]? (Select all that apply)	<ul style="list-style-type: none"> <li>1 Hand hoe</li> <li>2 Animal-drawn plows</li> <li>3 Tractors or other machinery</li> <li>990 OTHER, specify</li> </ul>	
E1.12	Ann_intype_i	What type of input did you utilize during [season] on your plots?  SELECT MULTIPLE	<ul style="list-style-type: none"> <li>1. Fertilizer</li> <li>2. Pesticide</li> <li>3. Herbicide</li> </ul>	

			4. Fungicide 5. Other 6. None	
E1.29	Ann_earn_all	How much did you receive in total from annual crop farm earnings in the last 12 months?	TZ shillings	

### E.2 Perennial Crops

E2.1	Pere_crop_num	How many fruit trees and permanent crops do you grow on plots?	Enter number	
E2.1.1	Pere_crops	Please tell me all of the fruit trees and permanent crops that you grow on your plots?		Ask respondent to select from list of fruit and perennial crops. These questions are asked for each fruit and permanent crop.
E2.6	Pere_trees	In the past 12 months, how many non-fruit trees did you plant on any of your plots?	#	
E2.6.1	Pere_treeuse	What do you plan to use these trees for?	1. Wood 2. Timber/Lumber 3. Erosion control 4. Border demarcation 990.Other	If Pere_trees is not 0, if Other record response
E2.11.6	Pere_inc_i	How much did you receive in total from perennial and fruit crop farm earnings in the last 12 months?	TZ shillings	

Crops Codes

<p><b>Cereals/tubers/roots:</b>            Maize.....11            Paddy.....12            Sorghum.....13            Bulrush Millet...14            Finger Millet...15            Wheat.....16            Barley.....17            Cassava.....21            Sweet Potatoes...22            Irish potatoes...23            Yams.....24            Cocoyams.....25            Onions.....26            Ginger.....27</p> <p><b>Legumes, Oil &amp; fruit:</b>            Beans.....31            Cowpeas.....32            Green gram.....33            Chick peas.....35            Bambara nuts.....36            Field peas.....37            Sunflower.....41            Sesame.....42            Groundnut.....43            Soyabeans.....47            Caster seed.....48</p>	<p><b>Fruits:</b>            Passion Fruit...70            Banana.....71            Avocado.....72            Mango.....73            Papaw.....74            Orange.....76            Grapefruit.....77            Grapes.....78            Mandarin.....79            Guava.....80            Plums.....81            Apples.....82            Pears.....83            Peaches.....84            Lime.....851            Lemon.....852            Pomelo.....68            Jack fruit.....69            Durian.....97            Bilimbi.....98            Rambutan.....99            Bread fruit.....67            Malay apple.....38            Star fruit.....39            Custard Apple...200            God Fruit.....201            Mitobo.....202            Plum.....203            Peaches.....204            Pomegranate.....205            Date.....210            Tungamaa.....211            Vanilla.....212</p>	<p><b>Vegetables:</b>            Cabbage.....86            Tomatoes.....87            Spinach.....88            Carrot.....89            Chilies.....90            Amaranths.....91            Pumpkins.....92            Cucumber.....93            Egg Plant.....94            Water Mellon.....95            Cauliflower.....96            Okra.....100            Fiwi.....101</p>	<p><b>Cash Crops:</b>            Cotton.....50            Tobacco.....51            Pyrethrum.....52            Jute.....62            Seaweed.....19</p>	<p><b>Permanent Cash crops:</b>            Sisal.....53            Coffee.....54            Tea.....55            Cocoa.....56            Rubber.....57            Wattle.....58            Kapok.....59            sugar Cane.....60            Cardamom .....61            Tamarind.....63            Cinnamon.....64            Nutmeg.....65            Clove.....66            Black Pepper....18            Pigeon pea.....34            Cassava.....21            Pineapple.....75            Palm Oil.....44            Coconut.....45            Cashew nut.....46            Green Tomato....300            Monkeybread.....301            Bamboo.....302            Firewood/fodder..303            Timber.....304            Medicinal plant..305            "Fence tree".....306            other.....990</p>
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### H. Household Savings, Borrowing, and Shocks

	Name	Question	Response options/units	Notes/instructions
<i>Thank you. I would like to ask a few questions now about how your household manages expenses.</i>				
11	Fin_credsource	In the past six months, has anyone in your household borrowed money?	1 Yes 2 No	If 2 >>> 13
11.1	Fin_credfrom	Who did they borrow from?	1. COMMERCIAL BANKS 2. MICRO-FINANCE INST 3. VILLAGE COMMUNITY BANK (VICOBA) 4. NEIGHBOURS / FRIENDS 5. FAMILY 6. NGO OR SELF-HELP GROUPS 7. OTHER INFORMAL MONEY LENDER 8. OTHER, SPECIFY	If fin_credsource = yes
12	Fin_amtbrw	In total, approximately how much has your household borrowed in the past 1.5 years?	TZ shillings	If yes to "has your household borrowed"
13	Fin_wntloan	If you wanted to get a loan of to cover your expenses or buy farm inputs, do you think you or anyone in your household would be able to do that?	1 Yes 2 No 996 Don't know	

### L. Wives/Partners Survey

L11	wives_part	Did you yourself participate in [ACTIVITY] in the past 12 months (that is, during the last [one/two] cropping seasons), from [PRESENT MONTH] last year to [PRESENT MONTH] this year?  A) Food crop farming B) Cash crop farming C) Livestock raising D) Non-farm economic activities. E) Wage and Salary employment F) Fishing or fishpond culture	1 Yes 2 No	If emp_part==No -> skip to next activity. Activity:
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		G) Major hh expenditures H) Minor hh expenditures		
L12	wives_decision	When decisions are made regarding [ACTIVITY], who is it that normally takes the decision?	1. Self 2. Spouse 3. Both spouse and self (joint decision making) 4. Other HH member 5. Other Non-HH member 999. N/A	If emp_decision==1, skip to next activity. No response needed if activity==G or H.
L13	Wives_decisionfreq	When decisions are made regarding [ACTIVITY], how often does the decision maker inform you about the decision?	1 Always 2 Sometimes 3 Rarely 4 Never 5 Unsure	If emp_decision != 1 answer this
L14	wives_input	How much input did you have in making decisions about [ACTIVITY] in the past 12 months?	1. No input or input in few decisions, 2. Input into some decisions, 3. Input into most or all decisions, 98. No decision made/Not sure	If emp_input==98, skip to next activity
L15	emp_extent	To what extent do you feel you can make your own personal decisions regarding [ACTIVITY] if you want(ed) to?	1. Not at all, 2. Small extent, 3. Medium Extent, 4. To a high extent.	
L16	emp_use_inc	How much input did you have in decisions on the use of income generated from [ACTIVITY]	1. No input or input in few decisions, 2. Input into some decisions, 3. Input into most or all decisions, 98. No decision made/Not Sure	No response needed if activity==G or H.
L17	Wives_landlaw	Do you know about the national land laws?	1 Yes 2 Yes, but don't know the details 3 No	
L18	Wives_hearing	How confident are you that you would receive a fair hearing if you had a land dispute?	1 Very confident 2 Somewhat confident 3 Unsure 4 Not confident 5 Very unconfident	
L19	Wives_takepos	Do you think it's possible that someone could try to take one of your parcels from you without your permission, say in the next 5 years?	1 Yes 2 No	Enumerator should specify only the parcels in targeted commune if the respondent has parcels in other communes

				If 2 >>> L22
L20	Wives_expro	How likely do think it is that someone would try to take one of your parcels from you in the next 5 years?	1 Unlikely 2 Somewhat likely 3 Very likely/it is happening now	If wives_takepos = yes
L21	Wives_reason	Which if any of the following are reasons why you think this could happen? <ul style="list-style-type: none"> <li>• Ongoing or past disputes or expropriation</li> <li>• Lack of documents</li> <li>• Length of agreement (if lease agreement for example)</li> <li>• Problems experienced by others in the community</li> </ul>	1 More important reason 2 Less important reason 3 Not a reason	If per_takepos = yes
L22	Wives_meet	How many group/village meetings have you attended in the past six months?	Enter number	
L22.1	Wive_meet_n	What kind of meetings have you attended?	1. Kitongoji Meetings 2. Village Meetings 3. Farmers' cooperative meetings 4. SACCOS or self-help group meeting 5. School meetings (SMC or parents) 6. Other	If wives_meet !=0
L22.2	Wives_meetfreq_n	How many times did you attend [MEETING]?	Enter number	
L22.3	Wives_speak	How many of those meetings have you spoken to the group?	Enter number	
L22.4	Wives_speakfreq	How many times did you speak at [MEETING]?	Enter number	If wives_speak != 0
L23	Wives_comfort	Do you feel comfortable speaking at village meetings or in group settings?	1 Yes 2 No	
L24	Wives_wgroup	Are there women's groups in the village or surrounding area?	1 Yes 2 No	If yes, continue If 2 >>> L26
L25	Wives_wattend	How many women's group meetings have you attended?	Enter number	If >0, continue
L25.1	Wive_totattend	How many women would you estimate were at the meeting?	Enter number	If many meetings (>10) were attended, this should refer to average.
L26	Wives_Lan_dcd_i	Who primarily decides how to use this household's parcel(s)?	1=Self 2 =Spouse 3=Both self and spouse together	

			4=Other male household member 5=Other female household member 990=Other, specify	
L27	Wives_Lan_inco_i	Who decides how to use any income generated from the use of this household's parcel(s)?	1=Self 2=Spouse 3=Both self and spouse together 4=Other male household member 5=Other female household member 990=Other, specify	
<b>Next I'd like to ask about your household's experience with borrowing money or other items in the past 12 months.</b>				
L28	Wives_loan	Over the past 12 months, did you or anyone else in this household borrow from someone outside the household or from an institution receiving either cash, goods, or services?	1 Yes 2 No	If 2 >>> L29
L28.1	Wive_loan_source	What was the source of the loan(s)?	1 COMMERCIAL BANKS 2 MICRO-FINANCE INST 3 VILLAGE COMMUNITY BANK (VICOBA) 4 NEIGHBOURS / FRIENDS 5 FAMILY 6 NGO OR SELF-HELP GROUPS 7 OTHER INFORMAL MONEY LENDER 990 OTHER, SPECIFY	Select all that apply
L28.2	Wives_loan_dec	Who made the decision to borrow from [SOURCE] most of the time?	1 SELF 2 SPOUSE 3 Both spouse and self (joint decision making) 4 OTHER HH MEMBER 5 OTHER NON-HH MEMBER 999 NOT APPLICABLE	Select all that apply
L28.3	Wives_loan_decuse	Who makes the decision about what to do with the money/ item borrowed from [SOURCE] most of the time?	1 SELF 2 SPOUSE 3 Both spouse and self 4 OTHER HH MEMBER OTHER NON-HH MEMBER 999 NOT APPLICABLE	Select all that apply
L28.4	Wives_loan_use	What did you use this loan/credit for?	1 SUBSISTENCE NEEDS	

			2 MEDICAL COST 3 SCHOOL FEES 4 CEREMONY/WEDDING 5 PURCHASE LAND 6 PURCHASE AGRIC. INPUTS 7 OTHER BUSINESS INPUTS 8 PURCHASE AGRIC. MACHINERY 9 BUY/BUILD DWELLING 990 OTHER(SPECIFY)	
L29	Wives_Lan_doc_i	Do you or your household have any kind of documentation of your rights to your HH's parcels?	1 Yes 2 No	If 2 >>> L31
L29.1	Wives_Lan_typedoc_i	What kind of documentation? SELECT ALL THAT APPLY	1. GRANTED RIGHT OF OCCUPANCY 2. CERTIFICATE OF CUSTOMARY RIGHT OF OCCUPANCY 3. INHERITANCE LETTER 4. OTHER GOVERNMENT DOCUMENT 5. OTHER DOCUMENT OR LETTER (NON-GOVERNMENT/UNOFFICIAL)	If land_doc_i=yes next question
L29.2	Wives_Lan_docobtain_i	When did you obtain the documentation?	Year/Month	If wives_land_doc_i=yes next question
L29.3	Wives_Lan_docobtain_i	How many people have ownership rights under this documentation?		Enter number
L41	Wives_CCRO	Have you heard of CCROs?	1 Yes 2 No	If 2 >>>Wives_LTA
L41.1	Wives_payCCRO	In general, how much (if anything) would you be willing to pay to have one of your parcels surveyed and to receive a CCRO?		Enter amount in TShs.
L42	Wives_LTA	Have you heard of [LTA]?	1 Yes 2 No	If 2 >>> Next section. DO NOT PROMPT IF RESPONDENT HAS NOT HEARD OF LTA.
L42.1	Wives_LTArec	Which of the following did you receive through LTA?	<ul style="list-style-type: none"> <li>Land was surveyed</li> </ul>	If Wives_LTA= yes

			<ul style="list-style-type: none"> <li>• CCRO</li> <li>• Notarized title</li> <li>• None of the above</li> </ul>	
L42.2	Wives_LTAimpr	What was your impression of LTA?	1 Very positive 2 Somewhat positive 3 Neutral 4 Somewhat negative 5 Very negative	If Wives_LTA = yes
L42.3	Wives_docyben	Do you believe that having documentation of your land rights through LTA benefits your household?	1 Yes 2 No	
L42.4	Wives_LTAcom	<p>Do you think LTA has benefited your community in any of the following ways:</p> <ul style="list-style-type: none"> <li>• Protects against losing land</li> <li>• Protects against disputes with neighbors</li> <li>• Makes it easier to rent out</li> <li>• Makes it easier to sell</li> <li>• Will make inheritance easier</li> <li>• Other</li> </ul> <p>SELECT ALL THAT APPLY</p>	<p>1. YES 2. NO</p>	If Wives_docyben = yes



## ANNEX D: MEMO EXPLAINING RISKS TO RCT DESIGN FROM CHANGING EVALUATION TIMELINE

### Options Memorandum: Impact Evaluation of the Land Tenure Assistance Activity in Tanzania

This memorandum was prepared at the request of the Office of Land and Urban in USAID’s Bureau for Economic Growth, Education, and Environment (E3/LU). It summarizes two options for E3/LU’s consideration for moving forward with the ongoing impact evaluation (IE) of the Feed the Future Tanzania Land Tenure Assistance (LTA) activity, given recent unanticipated changes in LTA activity implementation that present significant challenges for completing the IE as planned. The E3 Analytics and Evaluation Project (“the Project”) is implementing the IE.

This memorandum begins with an overview of the LTA implementation changes, then summarizes the original IE design and timeline, the key methodological challenges created by the LTA implementation changes, the two options for proceeding with the IE given the LTA implementation changes, and updated estimated budget information for the IE. These two options are:

- **Option 1:** Adhere to the original, approved IE design but have all remaining IE activities occur six months earlier than planned, and take steps to ensure that the IE sample includes a full roster of villages as per the approved design.
- **Option 2:** Proceed with six-month accelerated IE timeline as in Option 1, but with a reduced sample of villages.

#### LTA Implementation Changes

On August 9<sup>th</sup>, USAID informed the Project team of two significant and unexpected changes in activity implementation based on recent decisions the implementation team had taken.

First, LTA intends to have implementation in its next set of target villages occur approximately five months earlier than previously discussed with the Project team. The change in the LTA timeline is being proposed after the Project team completed the first round of IE baseline data collection and analysis, and despite known challenges that such changes create for the IE, which the Project team has repeatedly stressed in conversations with the LTA implementation team over the past year.

Second, LTA and the Iringa District Land Office (DLO) have ruled out 8 of the remaining villages in the master list used to determine the IE sample, leaving 27 villages – which is below the minimum threshold that the IE design requires.

#### The Approved Timeline and Evaluation Design

The Project team’s approved IE design, developed in coordination with USAID and LTA in 2016, is based on a cluster randomized controlled trial approach that has IE data collection taking place prior to LTA implementation in two phases, as shown in Table 29.

**TABLE 29: APPROVED TWO-PHASE IE DESIGN AND LTA IMPLEMENTATION SCHEDULE**

Phase	Implementation Year	Control	Treatment
1	2017-2018	15 randomly chosen villages do not receive LTA	15 randomly chosen villages receive LTA
2	2018-2019	15 randomly chosen villages do not receive LTA	15 randomly chosen villages receive LTA

The Project team completed Phase I baseline data collection in April 2017, randomly selecting 30 villages (and 2 buffer villages) from a list of 78 villages approved by LTA and the Iringa DLO. LTA, with input from the Iringa DLO, subsequently removed several villages from this list of 78 due to the potential challenges to LTA implementation, leaving 36 villages available for random assignment in Phase II. Per the approved IE design, Phase II baseline data collection – which also includes midline data collection for the Phase I households – was planned for March-April 2018, approximately one-year after the Phase I baseline.

LTA’s decision to accelerate activity implementation would require that IE data collection for Phase 2 occur around late October 2017.

### Methodological Considerations for the Options

One of the most important contributions of this IE is its rigorous design, since there have been few experimental studies on the impact of land formalization to date. Thus, the Project team sought to develop options in response to these LTA implementation changes that would preserve as much of the IE’s rigor as possible. Three methodological considerations need to be kept in mind for each of the options presented:

- **Data Collection Timing:** All IE baseline data collection in Phase II villages must occur prior to LTA implementation activities in those villages, regardless of the timeline for implementation. Otherwise, the IE will not be able to estimate LTA’s impact because it could not convincingly show that treatment villages would have been similar to the control villages had they not received the activity. Also, the Project team learned during Phase I baseline data collection that LTA started sensitization activities in two treatment villages prior to the IE baseline being conducted there. Going forward, it is critical that no additional implementation activities that involve LTA staff interacting with treatment villages take place before IE baseline data collection is completed.
- **Ability to Detect an Effect:** The IE design uses a panel survey, with respondents interviewed at the same time of year before, during, and after LTA implementation to rigorously estimate LTA’s impact and compare it to villagers in the control group. The requirements to survey households at the same time of year and to conduct a midline survey of Phase I households are critical for the statistical power of the IE (i.e., its ability to detect an effect where one occurred). Changing the timeline for baseline data collection, and potentially reducing the number of villages included in the IE, would dramatically reduce the rigor of the IE design and increase the likelihood that the evaluation will not be able to detect any impact of the LTA interventions. While the IE can attempt to address the timeline change through statistical weighting and other approaches during analysis, any estimation of impact will be sensitive to the estimation methods beyond what was originally proposed and it is doubtful that the IE could make up for the loss of statistical power that would result from these implementation changes.
- **Bias:** The new LTA timeline will introduce bias into the responses of household survey respondents, given the very different survey contexts. Phase I baseline took place during the rainy season in Iringa District, but if baseline data collection for Phase II takes place in late October it would be the dry season in Iringa, during which village life and activities differ.

The variance in responses between rainy and dry seasons, as well as the recall bias from people answering questions about spending, harvesting, and disputes, will also present estimation challenges during analysis. The IE's ability to control recall bias (e.g. respondents remembering with more precision their harvest amounts in October as compared to March), and even the perception of the survey at a different time of the year, are difficult to fully account for in the analysis and will likely limit the comparisons that can be made between the first and second baseline groups.

### Option I: Shifted Timeline, Full Village List

The first option identified by the Project team is to shift the timeline for Phase II baseline data collection from March-April 2018 to October-November 2017, as well as have the Project team and USAID work with LTA and the DLO to ensure that 30 villages are available for Phase II data collection and LTA implementation (i.e., 15 treatment villages and 15 control villages).

Option I still presents the following challenges and risks:

- **Bias from time-inconsistent responses:** Instead of collecting data from comparable groups at the same point in time in years one, two, and three of the study, the IE would have a full dataset of Phase I survey responses that are from a different context and limited in their comparability to Phase II.
- **Risk to power:** The ability to detect an effect based on the number of villages dictated by the IE design assumed that a panel survey would occur over three time periods (baseline, midline, and endline). The challenge for Option I is that period 1 and period 2 will differ in critical ways, namely that village life during the rainy and dry seasons is driven by different activities, and the gains to power by having three comparable periods of data collection may be diminished since the data may no longer be comparable due to seasonal differences. The Project team would need to conduct additional data simulation exercises to determine exactly what effect this will have on the IE's ability to detect an impact.

While Option I would not overcome the potential bias from time-inconsistent responses, it could allow for the IE to detect impact for outcomes where the effect size is large. Should USAID wish to proceed with Option I, it is critical that the following occur:

- The Iringa DLO and LTA would need to agree to expand the village list for Phase II to a minimum of 32 villages (which includes two buffer villages should LTA encounter issues in the selected villages). Also, all villages must also be assigned to the treatment group at the same time; once villages have been assigned to treatment or control groups, they cannot be re-assigned nor can villages get added to the sample ex-post.
- The IE would still need to conduct the midline survey of Phase I villages, since the original IE design is based on collecting data from all villages at the same time of year over three phases. Thus, Phase II data collection in October-November 2017 would need to include a midline survey of all 750 households from the Phase I baseline, as well as a baseline survey of the additional 750 Phase II households.
- The IE team would need to revisit its survey instrument to ensure that reference points included in the original survey are consistent with the new timeframe (e.g., "in the past rainy season" previously referred to 2016, but respondents would likely reference the 2017 rainy season in October).

While Option I preserves as much of the rigor of the original IE design as possible given the LTA implementation changes, the internal validity of the IE would still be diminished because of the changing period for midline data collection for Phase I, which in the original IE design helped the IE's statistical power by increasing the number of observations and time periods of observation.

## Option 2: Shifted Timeline, Diminished Village List

The second option identified by the Project team is similar to Option 1 and includes the same limitations, but entails greater risk and challenges as it would only use the current list of 28 remaining villages to randomly assign to treatment and control groups. Under Option 2, in October-November 2017 the IE would still conduct a midline survey of the Phase I villages and would survey the reduced number of villages as part of the Phase II baseline data collection.

Option 2 faces the following challenges:

- **Risk to power:** The IE would collect data on 58 instead of 60 villages, and it would require a minimum of a 21 percent change in outcomes between treatment and control under the original design.<sup>35</sup> The IE's ability to detect an effect cause by LTA given the reduction in villages *and* the time change is difficult to estimate, and the Project team would need more time for further data simulation. However, it is unlikely that the IE would be able to reliably detect LTA's impact for outcomes that under the original IE design were already on the margins of being sufficiently statistically powered, such as women's empowerment outcomes.

The challenge with reducing the number of villages *and* changing the timeline is that any estimate of impact would be difficult to differentiate from random noise, become highly sensitive to variance in the data, and be highly contingent on researcher estimation techniques.<sup>36</sup> Option 2 would, however, save time by not revisiting villages that were removed from the master list in mid-2016.

Further sensitivity to implementation issues: Option 2 leaves little to no room for further LTA implementation challenges and changes. If LTA encounters an issue in one of the randomly selected treatment villages and cannot fully implement there, the probability that the IE will be able to detect an effect for even the largest impacts will be significantly lower since there will be no buffer villages from which to choose.

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<sup>35</sup> Intra-cluster correlation coefficient: 0.05.

<sup>36</sup> This is particularly an issue with studies that have poor or compromised designs, with little clear estimation strategy. See Gelman, Andrew and Eric Loken, "The garden of forking paths: Why multiple comparisons can be a problem, even when there is no "fishing expedition" or 'p-hacking' and the research hypothesis was posited ahead of time." *Department of Statistics, Columbia University* (2013).

## ANNEX E: COMPARISON OF PHASE I AND PHASE II BASELINE DATA

Table 30 shows the overall Phase I and Phase II averages across baselines. More respondents reported disputes during Phase I (n = 68), but there were a greater number of disputes overall reported in Phase II; as mentioned previously, several Phase II respondents reported having more than two disputes. The Phase II respondents report more household members on average, as well as a higher range of household members. Notably, education level, age, and cooperative membership were similar across both phases.

**TABLE 30: COMPARISON OF PHASE I AND PHASE II BASELINE DATA**

Variable	Phase II					Phase I				
	n	Mean	SD	Min	Max	n	Mean	SD	Min	Max
Age	1320	45.36	14.99	18	102	1179	47.27	16.08	18	101
Number of parcels owned	788	2.38	1.27	1	11	782	2	1.02	1	8
Parcel size (in hectares for all parcels owned)	788	3.8	6.77	0.1	74.66	1179	1.64	3.85	0	86.6
Cooperative membership (y/n)	788	0.23	0.42	0	1	782	0.2	0.4	0	1
Education Level*	1320	0.85	0.47	0	3	782	0.88	0.52	0	4
Have you been faced with a situation when you did not have enough food to feed the household? (1=Yes, 0=No)	788	0.24	0.43	0	1	782	0.33	0.47	0	1
Possess land related documentation (1=Yes, 0 = No)	1320	0.12	0.33	0	1	1179	0.15	0.36	0	1
Heard of CCROs	788	0.68	0.47	0	1	782	0.58	0.49	0	1
Number of HH Members	788	4.42	2.32	1	26	782	3.95	1.95	1	12
Experienced a dispute in the past year (1=Yes, 0 = No)	788	0.07	0.25	0	1	782	0.09	0.28	0	1
Number of reported disputes	52	1.19	0.63	1	5	68	1.09	0.29	1	2
Do you have familiarity with land laws (1=Y, 0=N)	1320	0.08	0.27	0	1	1179	0.03	0.18	0	1

\*0 = No schooling, 1 = Primary, 2 = Form, 3 = University, 4 = Diploma